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CIRCULAR No. 160

Washington, D. C. April, 1931

ECONOMIC ASPECTS OF LAND SETTLEMENT IN THE CUT-OVER REGION OF THE GREAT LAKES STATES

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CONTENTS

Page
Introduction 2
Agricultural development of the region 2
  Area in farms and crops 2
  Percentage increase of land in farms since 1880 3
  Significant changes in acreage of land in farms between 1920 and 1925 6
Physical aspects of the region 7
  Wide variation of temperature conditions 7
  Range of number of frost-free days 10
  Adequacy of rainfall 14
  Variations in soils and relief 18
  Area of poor soils for farming 21
Forest and crop production 22
  Competition between forestry and crop production 23
  Clearing land for crop production 24
  Principal crops of the cut-over region 27
  Importance of dairying in the farm economy 32
  Tendency toward overstocking newly settled farms 35
Social and business aspects of the region 36
  Railway facilities 36
  Conditions with respect to roads 38
  Educational facilities 38
  Availability of local markets 39
  Types of land-selling agencies operating in region 41
  Necessity of careful investigation for wise selection of a cut-over farm 42
Credit conditions 43
  Tendency to underestimate initial capital requirements 45
  Important sources of credit 46
  Services of land-selling agencies in supplying credit needs of settlers 48
Credit conditions—Continued.
  Relation of credit aids from colonization companies to success of settlers 49
  Adaptability of land contracts to land-settlement conditions 51
Progress settlers may expect to make 52
  Average net gain of settlers 54
  Years required for average cut-over farms to become self-supporting 59
  Years required to make a well-developed farm 61
  Decrease in rate of progress after a period 61
  Steady decrease in rate of land clearing 62
  Decline in net gain per year 63
Farm turnover since 1920 in 33 selected cut-over settlement areas 66
  General aspects of settler turnover 66
  Reversion of farms to original owners between 1920 and 1928 67
  Factors causing farm reversion, considered by settlement areas 71
General outlook for land settlement in undeveloped regions 78
  Declining rate of increase in population 79
  Excess in potential crop land in relation to probable future requirements 79
  Probable small need for expansion of crop area during the next decade 80
  Relationship of general economic conditions in a given period to probable success of settlers 81
  Economic land classification a means of promoting wise selection of land for settlement 82
Summary 82
Literature cited 84

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[1] In 1919 and 1920 the U. S. Department of Agriculture, in cooperation with the agricultural experiment stations of Minnesota and Wisconsin and the department of geography, University of Michigan, made a comprehensive survey of land-settlement conditions in 47 settlement areas of the cut-over region of Michigan, Wisconsin, and Minnesota. In 1928 the survey was repeated in part in 33 of these settlement areas, in cooperation with the agricultural experiment stations of the three States, and the Wisconsin State Department of Agriculture, with a view to discovering the chief changes that had occurred during the intervening period. The Division of Land Economics, Bureau of Agricultural Economics, U. S. Department of Agriculture, initiated and directed both surveys and assumed the major part of the expenditure involved. The Minnesota State Department of Agriculture helped to finance some of the field work in Minnesota. The field work and the analysis of data for the 1919–20 survey (except for the data for 3 of the Wisconsin areas, analyzed by S. W. Shear) were under the general direction of John D. Black, formerly chief, division of agricultural economics, University of Minnesota (now professor of economics, Harvard University). William A. Hartman, of the Division of Land Economics, Bureau of Agricultural Economics, U. S. Department of Agriculture, was in charge of the 1928 survey. Partial results of the 1919–20 survey are presented in Department Bulletin 1295, Land Settlement and Colonization in the Great Lakes States. Certain unpublished results of the early survey have been combined with those of the second survey in the present bulletin, which has been prepared by Doctor Hartman. The following served as field agents in taking schedules in the 1928 survey: John S. Cotton, Karl Dressel, B. W. Gustavfson, and Guy A. Peterson.

INTRODUCTION

The large area comprising roughly the northern two-thirds of the three Lakes States, Michigan, Wisconsin, and Minnesota, constitutes a region of more or less retarded development. During the approximate three-quarters of a century since these States were first thrown open to occupancy, the tide of settlement has not only fully occupied and developed the southern parts of the three States but has flowed on to areas far to the westward. The retarded development to the north has been due in large part to the heavy covering of pine and hemlock and hardwood timber, combined with unfavorable soil and climatic conditions, over much of the region. The cutting of the timber left much of the land covered with refuse, which has since been grown over with brush and second growth, and the pine stumps rot slowly and are hard to remove. Meanwhile the large tracts of open land in the prairie States and Great Plains have invited settlement. The rate of development since 1920 has also been affected seriously by the greatly reduced demand for farm land.

Within the region itself there are great variations in degree of development even within a relatively small section. Many of the best adapted portions for agricultural and recreational purposes have already been developed to a considerable degree. Much of the remainder is not suitable for agricultural development under any probable demand for land in the Nation as a whole or in this particular region. The development in the next decade or two will occur mostly in sections adjacent to developed communities and established markets.

This circular describes and presents some of the fundamental conditions affecting the development of this cut-over region and summarizes briefly the progress that settlers may expect to make in developing cut-over land farms. Because of the perennial interest in the possibilities and opportunities for agricultural development in this large region, this study should be of special interest to prospective and established settlers and to land-selling agencies operating in this region or similar regions.

AGRICULTURAL DEVELOPMENT OF THE REGION

AREA IN FARMS AND CROPS

This region may be approximately defined as consisting of 113 counties, or 71,000,000 acres, in which only a third of the land is in farms and only an eighth is in crops. The map in Figure 1 divides the 113 counties into three groups on the basis of their agricultural development as of 1920. Group 1 comprises those counties that have less than 25 per cent of their land in farms; Group 2 represents those that have from 25 per cent to 50 per cent in farms; and Group 3 comprises those counties that have over 50 per cent of their land in farms but less than 50 per cent in improved land. The 39 counties in Group 1 represent about half the total area; they have only 13.1 per cent of their land in farms and only 3.6 per cent in crops. In Group 2, comprising 29 counties, about a third of the land surface is in farms and 11.8 per cent in crops.

In much of the cut-over area development has been retarded by stumps and brush and soils of poor quality. (For county identification see fig. 2.) Sandy soil holds back development in central Wisconsin and central Michigan. Buffalo, La Crosse, and Crawford Counties (in western Wisconsin) although not primarily a part of the cut-over region, and although long settled, have less than 50 per cent of their area improved, largely because of much rough topography. Although Table 1 indicates that in the case of Group 3 the percentage of farm acreage in woodland is not much less than in Group 2, the latter group has a much larger acreage of land in woodland outside of farms. Swamp and marsh rather than stumps and brush hold development back in Kittson and Marshall Counties in northwestern Minnesota, and there is considerable open swamp in many other counties, but it is not seriously out of place to call the combined three groups of counties the cut-over region.

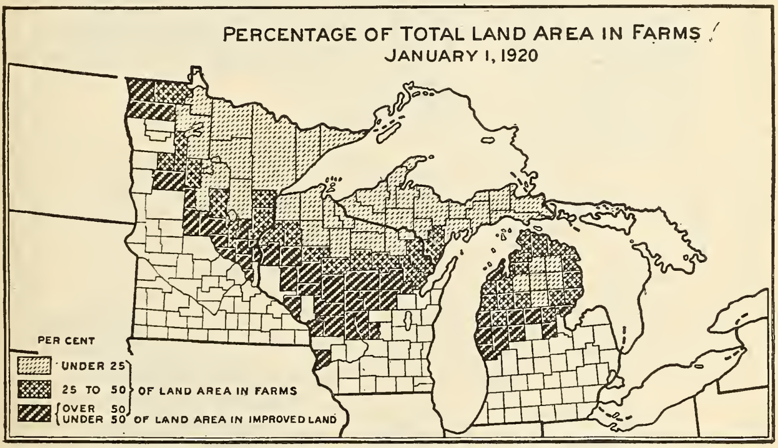

FIGURE 1.—The shaded portion of the map represents the so-called "cut-over" or undeveloped region of the three Lakes States. This cut-over land is in various stages of development, and from this standpoint the counties involved are divided into three groups, on the basis of census data, and here indicated by the shadings

Figure 3 emphasizes how little developed, agriculturally, the cut-over region is and how the older agricultural parts of these States shade off into the undeveloped sections. County lines were employed to show the boundries of the cut-over region in Figure 1, but this map shows that in some places the county boundary does not coincide exactly with the true boundary of the region, which falls somewhere within the county.

PERCENTAGE INCREASE OF LAND IN FARMS SINCE 1880

The land in farms in the cut-over region increased from 10.6 per cent to 33.8 per cent of the total area between 1880 and 1925. (Table 1.) This is an increase at the average rate of 5.1 per cent every 10 years. Even at this rate a long time would have to elapse before a large proportion of the land area would be in farms. As a matter of fact, the rate of increase is declining. Since 1900, the increase has been only 4 per cent per decade, and this rate will probably decline

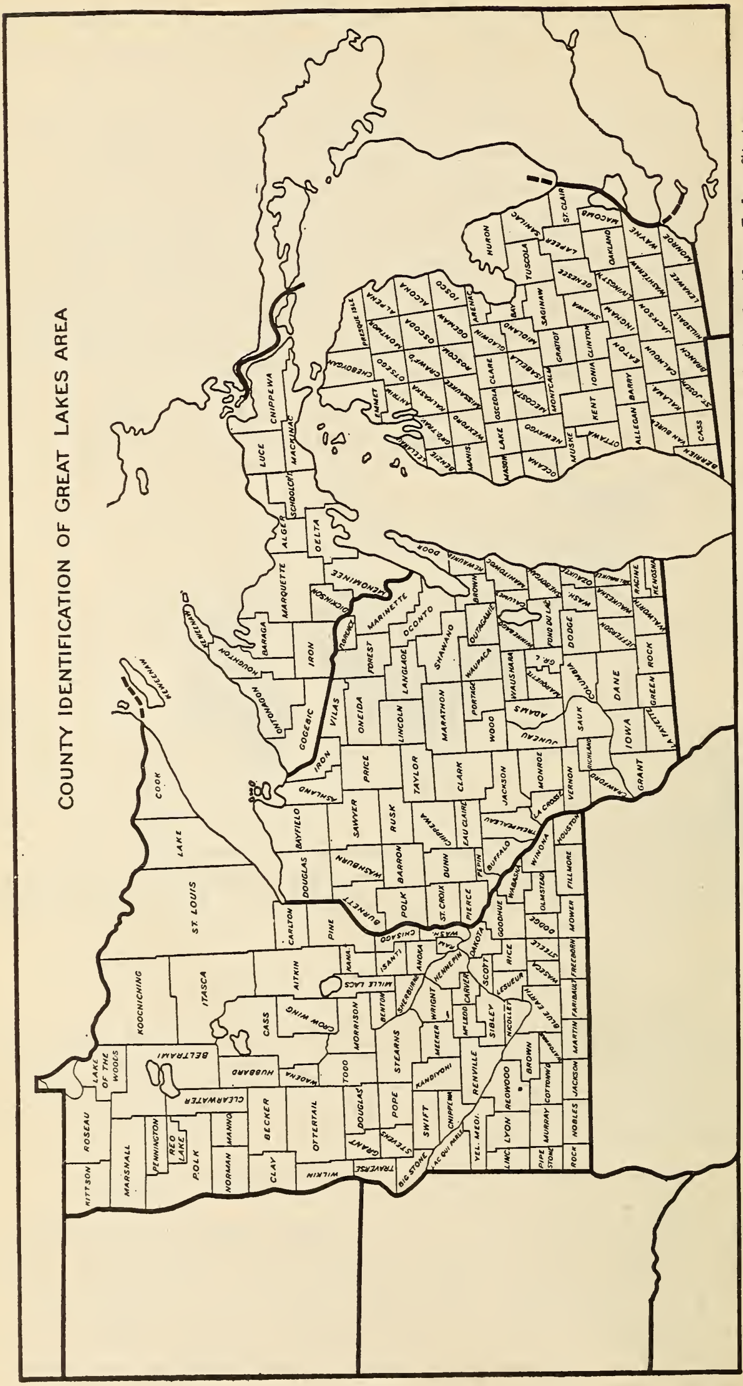

FIGURE 2.—This map will serve as a guide map for those who wish to locate certain counties within the three Lakes States

still further as the better lands are selected and occupied. It is doubtful if even 60 per cent of this region will ever be in farms. (Fig. 4.) The sections less adapted to agriculture because of character of the soil, topography, drainage, prevalence of stones and rock outcrops, short frost-free season, or inadequate transportation outlets will become more imporant for forest growth as the timber supply of the Nation becomes scarce.

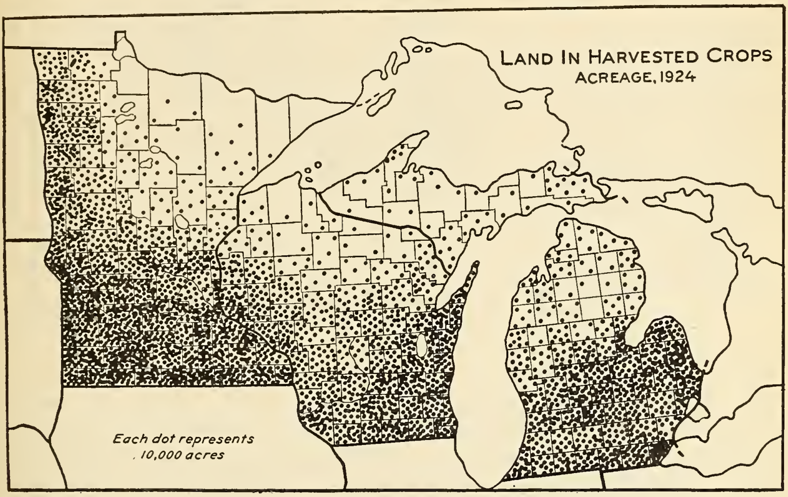

FIGURE 3.—The acres of land in crops mark the southern boundary of the cut-over region clearly. In some counties the division line is distinct. The effect of the sandy land in central Wisconsin and the northern part of lower Michigan is evident. (Based on the census)

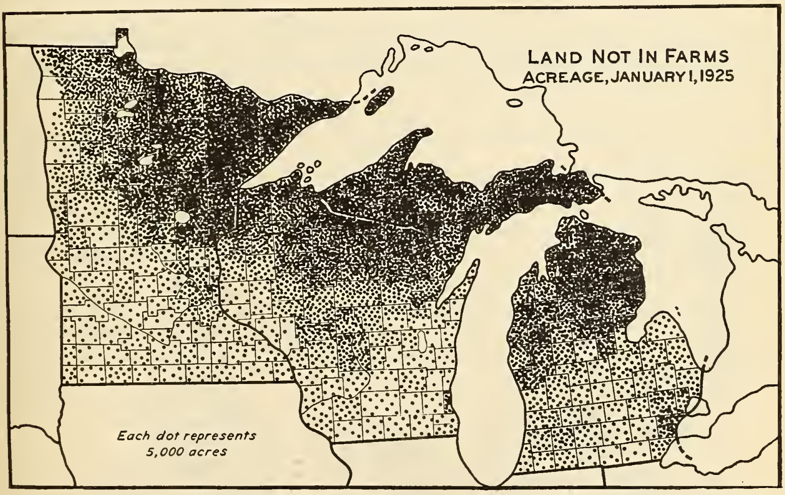

FIGURE 4.—The proportion of land not in farms in any county or locality is largely determined by character of the soil, topography and drainage, prevalence of stones and rock outcrops, length of the frost-free season, and availability of transportation outlets. In general, the land farthest north has been last to be logged off and is last to be taken into farms. The very black areas represent swampy or sandy or rocky land. The southward extensions, as in central Wisconsin and Minnesota and western Michigan, represent sandy land. (Based on the census)

TABLE 1.—*Acreage in farms and in crops in the cut-over region of the Great Lake States, census years, 1880–1925*

Item	Unit	1880	1890	1900	1910	1920	1925
All land in farms	1,000 acres	7,535	10,752	16,839	20,460	23,890	24,005
Increase over last census:							
Total	do		3,217	6,087	3,621	3,430	115
Percentage	Per cent		42.7	56.6	21.5	16.8	0.5
Percentage of total land area	do	10.6	15.1	23.7	28.8	33.6	33.8
Improved land in farms	1,000 acres	2,745	4,307	7,142	9,002	11,023	(1)
Increase over last census:							
Total	do		1,562	2,835	1,860	2,021	(1)
Percentage	Per cent		56.9	65.8	26.0	22.5	(1)
Percentage of total land area	do	3.9	6.1	10.1	12.7	15.5	(1)
Percentage of all land in farms	do	36.4	40.1	42.4	44.0	46.1	(1)
Land in crops	1,000 acres	1,772	3,285	5,269	6,443	8,951	8,823
Increase or decrease over last census:							
Total	do		1,513	1,984	1,174	2,508	−128
Percentage	Per cent		85.4	60.4	22.3	38.9	−1.4
Percentage of total land area	do	2.5	4.6	7.4	9.1	12.6	12.4
Percentage of all land in farms	do	23.5	30.6	31.3	31.5	37.5	36.8
Percentage of improved land in farms	do	64.6	76.3	73.8	71.6	81.2	(1)

(1) Data not obtained for 1925.

The increase in improved land was at the rate of 2.9 per cent per decade from 1880 to 1920, and the increase in acreage of crops harvested was at the rate of only 2.5 per cent per decade during this period. In other words, land is taken into farms more rapidly than it is cleared, and is cleared more rapidly than it is put into crops.

SIGNIFICANT CHANGES IN ACREAGE OF LAND IN FARMS BETWEEN 1920 AND 1925

During the 5-year period 1920–1925 Michigan experienced a large decrease in lands in farms; only Minnesota had any noticeable increase. (Figs. 5 and 6.)

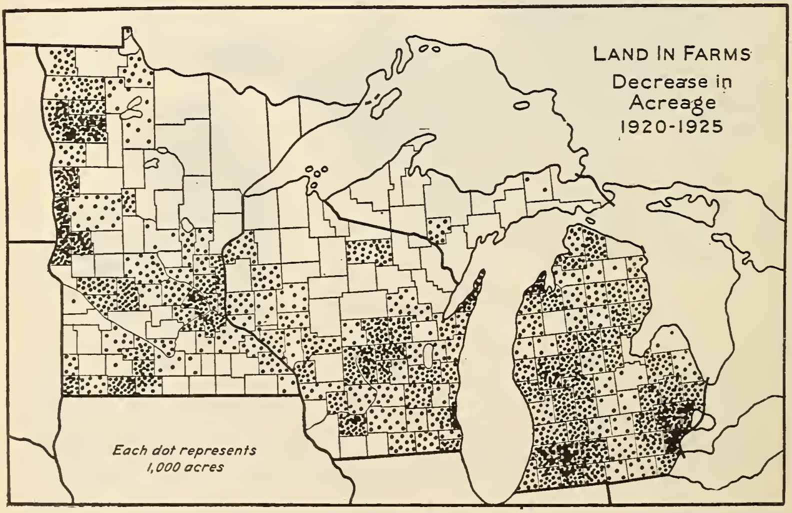
LAND IN FARMS
Decrease in Acreage 1920-1925
Each dot represents 1,000 acres

FIGURE 5.—Decrease in land in farms during this 5-year period was most pronounced in the sandy portions of Michigan and central Wisconsin and the swampy parts of Minnesota. (Based on the census)

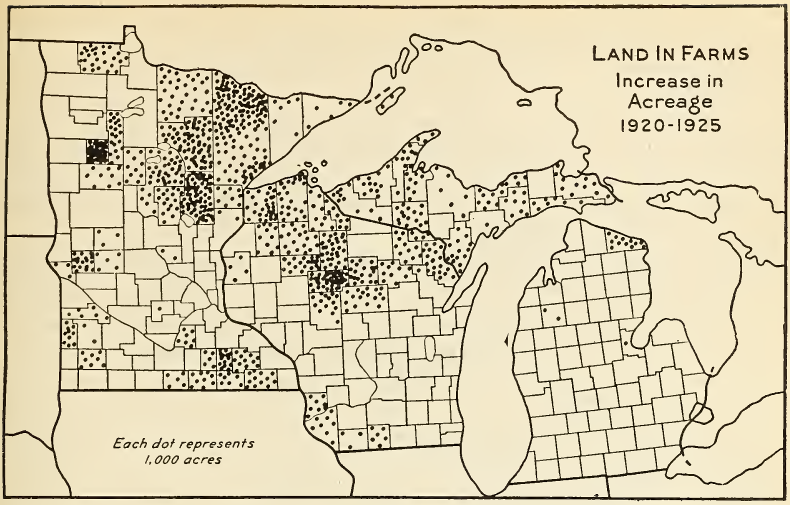

FIGURE 6.—Increase in land in farms during this period was mostly in the newer counties, particularly in Minnesota and Wisconsin. (Based on the census)

The continued expansion in newly cut-over counties and the swing backward occurring in the older counties of these States are developments well worth studying. The former reflects the continued occupation of the land by those who work in the mines. It also indicates the occupation of lake-shore land. On the other hand, the abandonment of land that is taking place in various counties in different parts of all three States (fig. 5) indicates that much of the land taken up for farming has proved to be submarginal for farming under present economic conditions. Whether such abandonment will continue in particular sections is a question that can be profitably studied both by prospective settlers and by colonizers. In recent studies in Wisconsin (*3*, *4*, *5*)[2] it was found that much undeveloped and partly developed land is reverting to public ownership because of tax delinquency. Furthermore, because of having large acreages of nontaxpaying lands within their boundary lines, many civil town units and the counties in which these towns are located are in financial distress. Many of these are in the recently occupied counties in Group 1. As a consequence, those taxpayers who remain on their land are forced to bear an increasing tax burden, which in turn results in further abandonment of land.

PHYSICAL ASPECTS OF THE REGION

WIDE VARIATION OF TEMPERATURE CONDITIONS

Temperature conditions may be generalized in terms of average temperatures for the different seasons of the year, average length of growing season, and average dates of last killing frost in the spring and first killing frost in the fall. The great range in these conditions in the cut-over region within comparatively short distances is pictured in Figures 7 to 14. The maps are based upon reports of about

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[2] Italic numbers in parentheses refer to Literature Cited, p. 84.

350 weather stations up to 1920.[3] The lines or isotherms are drawn through all the points that have the same average dates of first or last killing frost or the same average temperatures. The small scale on which these maps are drawn and the large variations in temperature conditions within small sections prevent detailed discussion of particular tracts of land. The maps will not help the individual settler to select a particular farm, but they will help him to understand the temperature conditions he can expect to find in any specific area of considerable extent.

Figures 7 to 10 present pictures of average temperatures in the three Lakes States in each of the four seasons of the year, spring, summer, fall, and winter. In general, the winter and fall temperatures are lowest toward the west and in all directions away from the lakes, whereas the spring and summer temperatures are lowest toward the east and in all directions toward the lakes. Altitude also plays a considerable part in determining the temperature. The lines of equal temperature all bend southward around localities of high altitude such as in north-central Wisconsin, north-central and southeastern Minnesota, and counties in the extreme southwestern corner of Minnesota. These differences affect the crops that can be grown in these localities and consequently should be considered carefully by prospective settlers and colonizers.

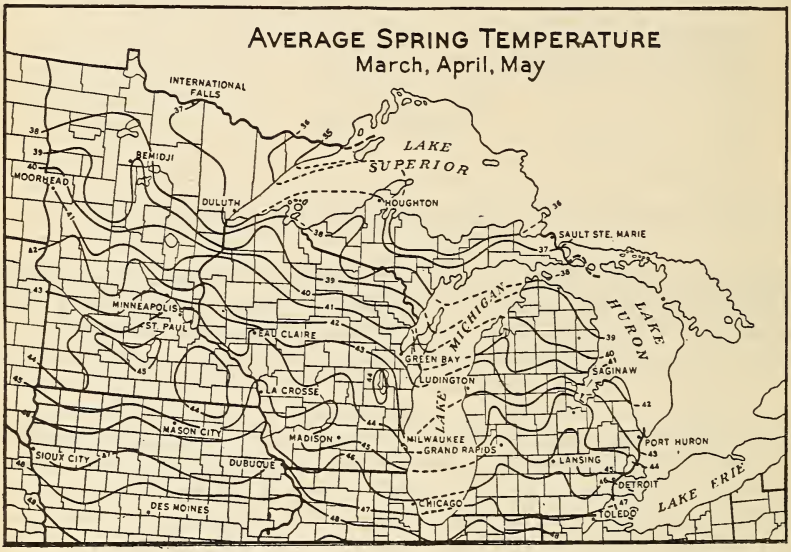

FIGURE 7.—It is a remarkable coincidence that in the cut-over region the average spring temperature is almost identical with the average annual temperature. In the eastern part the average spring temperature is about 2 to 3 degrees lower than the annual, but in the western part the variation from the average annual temperature is only about 1 degree. The lowest spring temperatures are under 36° F. around the shores of Lake Superior. They are relatively low around Lake Michigan. In the spring the lakes become warm much more slowly than the land, and this lowers the temperature of the adjoining land. An important effect of the late springs near the lakes is to keep fruit buds from blossoming until after the frost danger is well over. Minnesota, being farthest from the Great Lakes, has the warmest spring months. An important effect is earlier planting of corn. (Data supplied by United States Weather Bureau from 350 stations)

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[3] The maps published heretofore, as in the Atlas of American Agriculture (*11*), are based on reports from fewer stations and upon reports only through 1914.

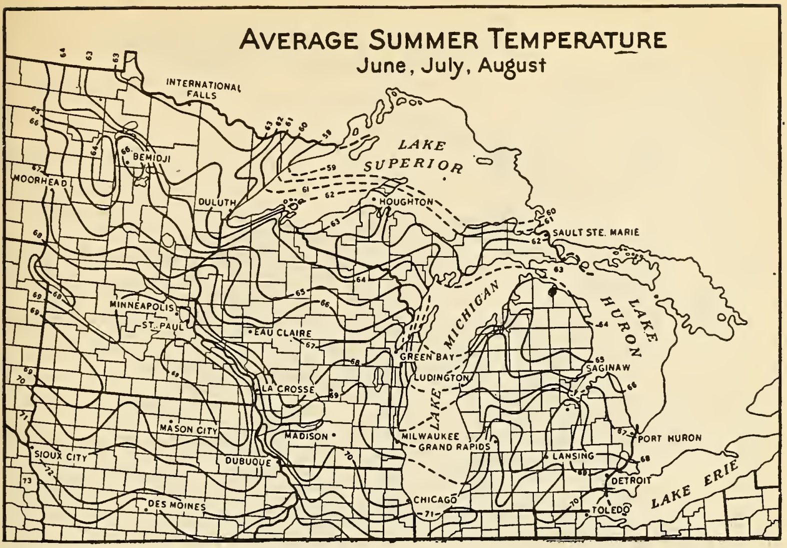

FIGURE 8.—The summer temperatures of Detroit, Milwaukee, and Minneapolis average about the same. Although the Minnesota cut-over area is farther north than the area in the other two States, the summers are equally warm. The isotherms of summer temperature all turn southward toward the lakes. The lowest summer temperatures are in upper Michigan and close to Lake Superior. Most of the cut-over region has an average summer temperature under 67° F., and the lowest is about 61°. This means that the climate of the region is not so well suited for corn. (Data supplied by United States Weather Bureau)

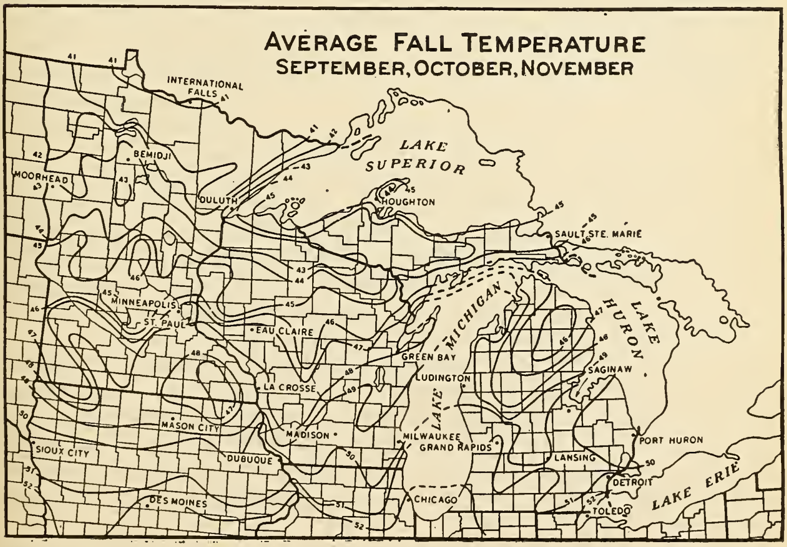

FIGURE 9.—Most of the cut-over region has an average fall temperature of less than 46° F. The lowest fall temperatures are in extreme northern Minnesota. In the fall the lakes cool more slowly than the land; hence, the isotherms turn upward near the lakes and downward away from the lakes. This gives to Green Bay and Marinette in Wisconsin a fall season almost as warm as that of northern Iowa. (Data supplied by United States Weather Bureau)

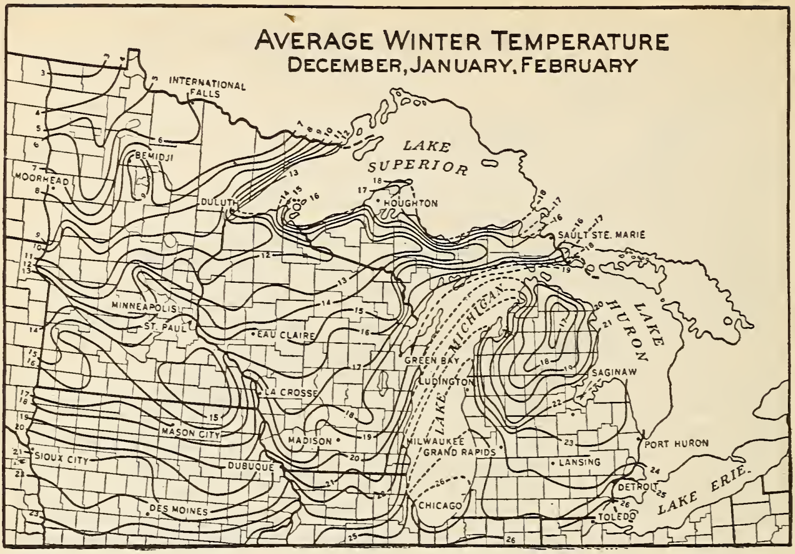

FIGURE 10.—The range in average winter temperatures in various parts of the cut-over region is from 5° F. in extreme northern Minnesota to 21° on some of the cut-over land in southern Michigan. The lakes have a pronounced influence on winter temperatures and make it possible to grow fruit in northern Michigan that can not be grown in central Minnesota. (Data supplied by United States Weather Bureau)

RANGE OF NUMBER OF FROST-FREE DAYS

The number of days without killing frost in the cut-over region ranges from 50 in the center of northern Michigan to 170 on the east shore of Lake Michigan and along the Mississippi Valley. (Fig. 11.) For most of the region, however, the frost-free season is between 100 and 130 days. Lake Superior gives to the land along its shores a frost-free season of 130 to 140 days in some places as contrasted with 100 and less days a relatively short distance inland.

The lengthening of the season near the lakes occurs both in the spring and in the fall, but particularly in the fall. The average date of the last killing frost in the spring, along the shores of Lake Michigan, is from May 6 to May 16 as contrasted with from May 16 to June 1 a relatively short distance inland. (Fig. 12.) Close to Lake Superior, the average date of the last killing frost in the spring is May 21; a short distance inland it is June 1.

Early frosts in the fall are not uncommon. Along the shores of Lake Michigan killing frosts occur about October 11, on an average; but a short distance inland frost can be expected between September 21 and October 1. (Fig. 13.) The comparable fall dates close to Lake Superior are, on an average, a week or so earlier—September 26 to October 1 close to the lake and September 11 to September 21 farther inland.

Lakes have the described effect upon early and late frosts because bodies of water cool more slowly than land in the fall and warm more slowly than land in the spring. Consequently, a large body of water tends to retard the growth of plants in the spring until the danger of frost is over and wards off early frosts in the fall.

The great range in temperature conditions within comparatively short distances is brought out by the data in Table 2, which presents the number of killing frosts by months from June to September for 56 weather stations. The names and locations of these stations

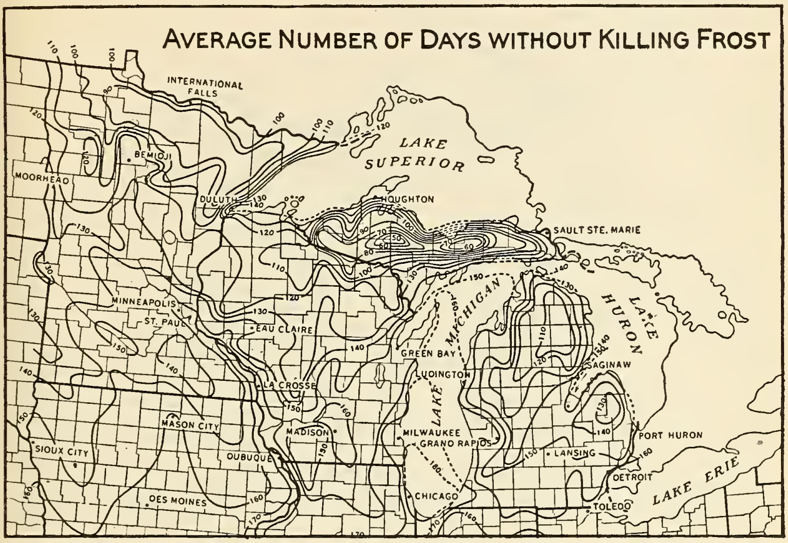

FIGURE 11.—The solid black lines are drawn through points at which the average number of days without killing frost is approximately the same. Nearness to the Great Lakes affects the growing season even more than it does temperature. The extreme range in the frost-free season for the cut-over area is from 50 days in the center of northern Michigan to 170 days on the east shore of Lake Michigan and along the Mississippi Valley. (Data from the United States Weather Bureau)

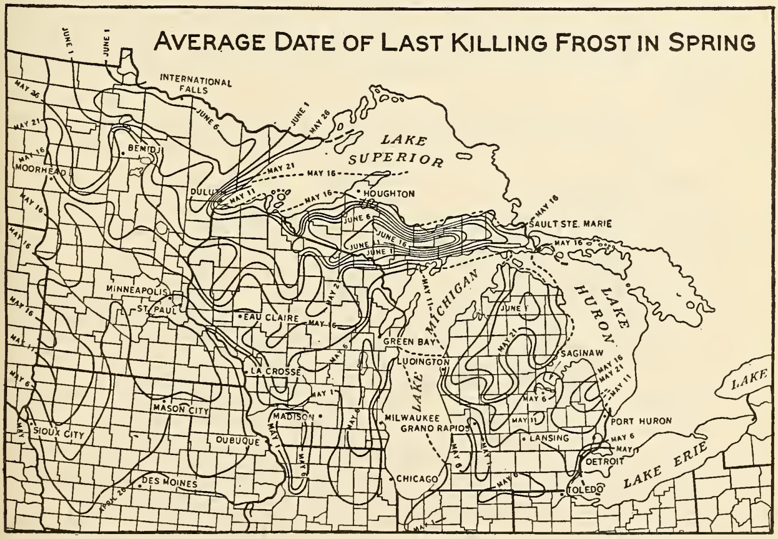

FIGURE 12.—The average date of the last killing frost in the spring for most of the region is after June 1, but this average date is somewhat misleading because in a considerable proportion of the seasons represented in the average, the last frost comes after June 1. On the other hand the last killing frost in the spring, in certain sections in certain years, comes a week or two before June 1. (Data from the United States Weather Bureau)

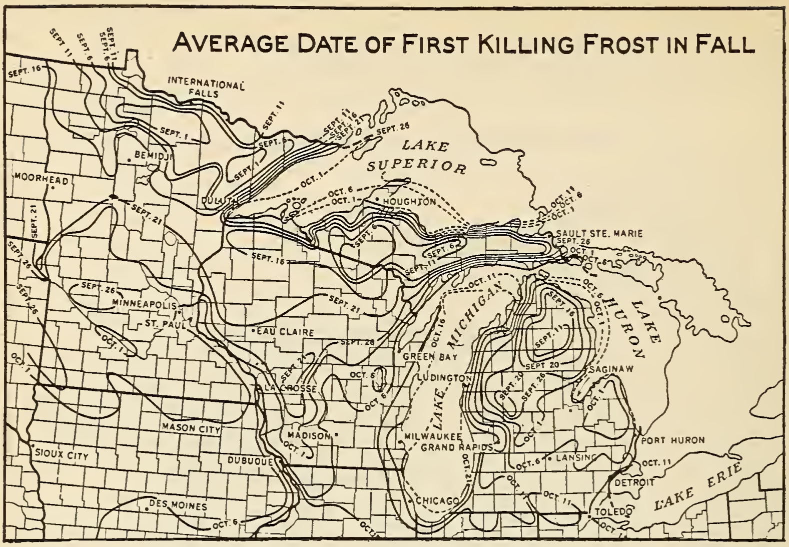

FIGURE 13.—For some of the region the average date of the first killing frost in the fall is before September 11, and for much of it before September 21. However, in one-half of the falls for which weather data have been averaged the first frost comes before this date. (See Table 2.) (Data from United States Weather Bureau)

are as shown in Figure 14. In the 18-year period covered, no frosts occurred during June, July, and August, along the lake shores at Houghton, Escanaba, or Sault Ste. Marie, Mich., but at Humbolt, Mich., which is a short distance inland, 17 frosts occurred in June, 6 in July, and 14 in August. Cloquet, Roseau, and Meadowlands are the Minnesota points from which most frosts are reported. The records from 16 Wisconsin stations report only 2 frosts in July and 6 in August.

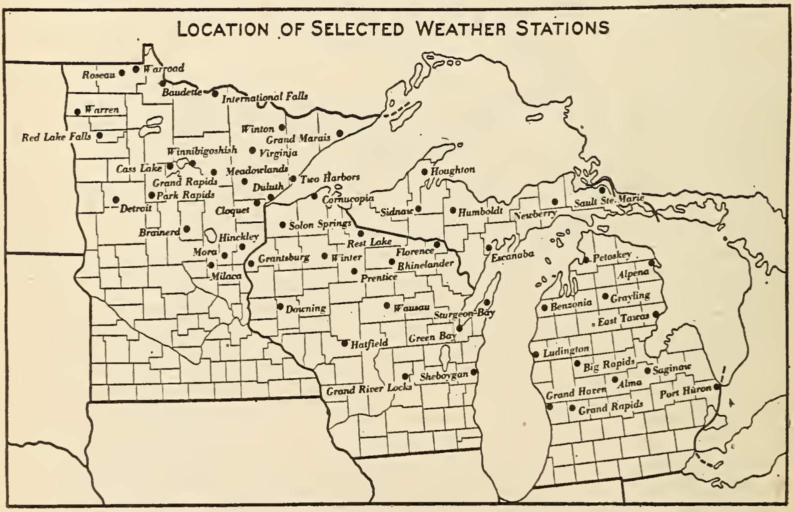

FIGURE 14.—The weather stations from which the frost reports in Table 2 were compiled are shown here

TABLE 2.—*Number of years in which a temperature of 31° F. or lower was recorded at stated weather stations during the growing season, May–September, 1912–1929* [1]

Station	May		June		July		August		September	
	Length of record	Years frost occurred	Length of record	Years frost occurred	Length of record	Years frost occurred	Length of record	Years frost occurred	Length of record	Years frost occurred
	Years	*Number*	*Years*	*Number*	*Years*	*Number*	*Years*	*Number*	*Years*	*Number*
MICHIGAN										
Houghton	18	16	18	0	18	0	18	0	18	1
Escanaba	18	12	18	0	18	0	18	0	18	5
Sault Ste. Marie	18	15	18	0	18	0	18	0	18	3
Sidnaw	14	13	14	13	14	4	15	8	14	13
Humboldt	18	17	18	17	18	6	18	14	14	14
Newberry	16	16	16	5	18	0	18	2	16	10
Petoskey	15	12	18	0	17	0	18	0	17	2
Alpena	18	12	18	0	18	0	18	0	18	6
Grayling	15	15	17	6	15	0	18	1	14	10
Benzonia	17	15	18	1	18	0	18	0	18	6
East Tawas	16	15	18	3	18	0	18	0	16	10
Ludington	17	8	18	0	18	0	18	0	18	0
Big Rapids	17	15	18	0	18	0	18	0	18	7
Saginaw	18	8	18	0	18	0	18	0	18	1
Alma	17	9	18	0	18	0	18	0	17	5
Grand Haven	18	5	18	0	18	0	18	0	18	0
Grand Rapids	18	4	18	0	18	0	18	0	18	0
Port Huron	18	5	18	0	18	0	18	0	18	1
WISCONSIN										
Cornucopia	18	18	18	8	18	0	18	0	17	9
Downing	18	17	18	3	18	0	18	0	18	13
Florence	18	17	18	9	18	0	18	1	18	16
Grand River Locks	18	9	18	1	18	0	18	0	18	10
Grantsburg	18	16	17	7	18	1	18	1	18	15
Green Bay	18	7	18	0	18	0	18	0	18	1
Hatfield	17	16	18	4	18	0	18	0	18	14
Prentice	18	17	18	12	18	1	18	3	18	17
Racine	18	6	18	0	18	0	18	0	18	1
Rest Lake	16	15	16	9	17	0	17	0	17	15
Rhinelander	18	17	18	6	18	0	18	0	18	16
Sheboygan	18	4	17	0	18	0	18	0	18	1
Solon Springs	18	18	18	11	17	0	18	1	18	17
Sturgeon Bay	17	13	17	2	18	0	18	0	18	5
Wausau	18	14	18	1	18	0	18	0	18	10
Winter	9	8	9	5	9	0	9	0	9	8
MINNESOTA										
Baudette	18	17	18	6	17	0	17	1	17	15
Brainerd	17	15	15	4	16	0	18	1	17	13
Cass Lake	13	12	13	2	13	1	13	1	13	10
Cloquet	18	17	17	12	18	2	18	7	18	17
Detroit [2]	18	16	18	6	18	0	17	0	18	13
Duluth	18	14	18	0	18	0	18	0	18	11
Grand Marais	10	9	10	0	10	0	11	0	12	5
Grand Rapids	13	12	13	7	13	0	12	4	13	11
Hinckley	10	10	10	3	10	0	10	2	10	7
International Falls	14	13	13	2	12	0	11	0	11	7
Meadowlands	13	13	13	8	12	2	13	8	13	11
Milaca	14	12	14	1	14	0	13	0	15	11
Mora	17	15	17	0	16	0	17	0	17	12
Park Rapids	17	16	17	1	18	0	18	0	18	14
Red Lake Falls	12	11	11	2	11	0	13	1	13	12
Roseau	18	17	18	12	18	1	18	3	18	17
Two Harbors	18	15	18	0	18	0	18	0	18	8
Virginia	18	17	18	6	18	0	18	0	17	14
Warren	11	10	11	3	11	0	11	1	11	8
Warroad	17	16	18	6	18	0	18	0	18	14
Winnibigoshish	18	16	17	0	16	0	17	1	18	11
Winton	3	3	3	1	3	0	3	0	3	2

Compiled from reports of the United States Weather Bureau.

[1] Data are given for 18 years for each station for which complete records are available.

[2] Recently known as Detroit Lakes; apparently no change of location involved.

In general, locations near inland lakes may be relatively free from early frosts in the fall and late frosts in the spring. Lower lands are more subject to frost than uplands because the cool air drains away into the flats and hollows. Timber interferes with air drainage; hence, as the timber is removed, the frost danger is lessened. On peat soils, other things being equal, the frost danger is unusually great. In 1914 the temperature at the substation at Grand Rapids, Minn., fell below freezing point on peat soils four times in June, once in July, and five times in August. During this period only one frost occurred upon the surrounding mineral soils, and that was on August 27. On the peat marshes in the vicinity of St. Paul, Minn., light or severe frosts occurred each summer month in 1924.

Length of the growing season is an important consideration, but much may depend on how early the season begins. For one interested in growing corn, a growing season that begins early is better than one of the same length that begins late. On the other hand, later springs and falls are desirable for fruit and potato growing. These conditions vary too much from place to place, even within a single township, to make it safe to estimate for a particular area from the foregoing maps, which furnish only a general picture. If authentic information as to local frost hazards is not available, the best a prospective farmer can do, in a section of short and irregular growing seasons, is to avoid low flat land surrounded by higher land or by heavy timber. Then, too, the prospective settler should remember that heavy soil needs a longer growing season than do light soils.

ADEQUACY OF RAINFALL

The average annual precipitation in this region ranges from a maximum of over 35 inches to a minimum of less than 23 inches.

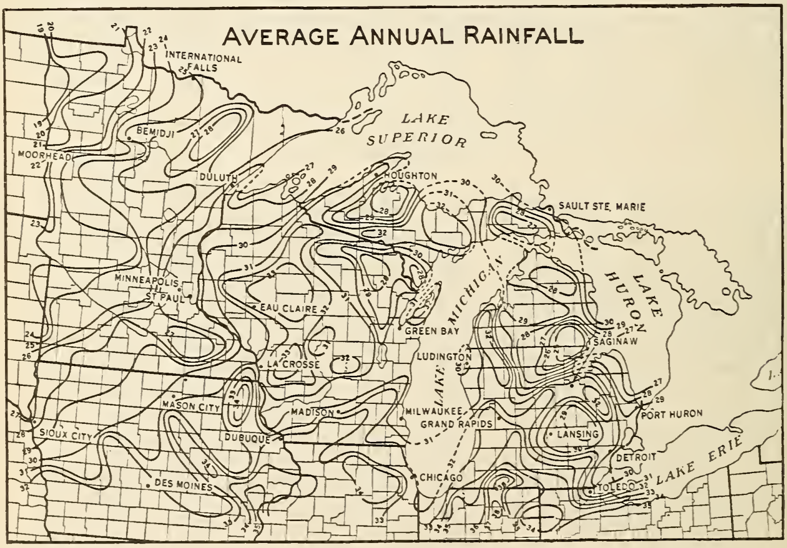

FIGURE 15.—The maximum average annual rainfall for the region is 33 inches in north-central Wisconsin and 32 inches in a few isolated sections. The lowest is in northwestern Minnesota and eastern Michigan

(Fig. 15.) The rainfall decreases westwardly in Minnesota and eastwardly (but to a less degree) in Michigan.

Light soils and relatively light rainfall, especially during the growing months, over a large proportion of the cut-over part of southern Michigan and a considerable part of northern Michigan seriously handicap successful crop production.

The western half of Wisconsin and the eastern half of Minnesota average more than 21 inches of rainfall during the warm months; eastern Wisconsin and western Minnesota average 18 to 21 inches; but most of the cut-over area of Michigan averages only 15 to 18 inches. In eastern Michigan, where summer rainfall is particularly light, droughts occur at critical periods during the summer.

In general, the larger the proportion of the rainfall that comes during the growing season, the more crop production is promoted. The rainfall-distribution chart (fig. 16) for Park Rapids, Minn., at the western edge of the area, for Alpena, Mich., at the eastern edge, and for Marquette, Mich., at the northern edge, pictures important differences in this respect. Park Rapids has over three times as much precipitation from May to August as during the four corresponding winter months, November to February; at Alpena, about two-thirds as much rain falls in winter as in summer; and at Marquette the rainfall is even more uniform throughout the year.

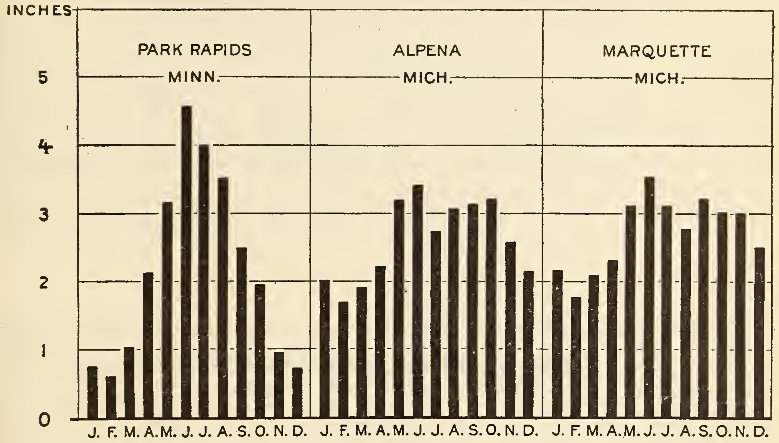

FIGURE 16.—AVERAGE MONTHLY PRECIPITATION

Park Rapids, Minn., has the heaviest summer rain concentration characteristic of the western plains; Alpena and Marquette, Mich., are typical examples of the lakes region, with the rainfall more evenly distributed throughout the year.

The amount of rainfall that may be expected during the spring, summer, fall, and winter months, in the various sections of each of the three States, is mapped in Figures 17 to 20. These maps show significant differences in the rainfall in different parts of the cut-over region. Although lighter soils need more rainfall than heavier soils, lands of light soil in eastern Michigan receive a lower annual rainfall and, what is more important, receive less rainfall during the growing months, than other parts of the cut-over region.

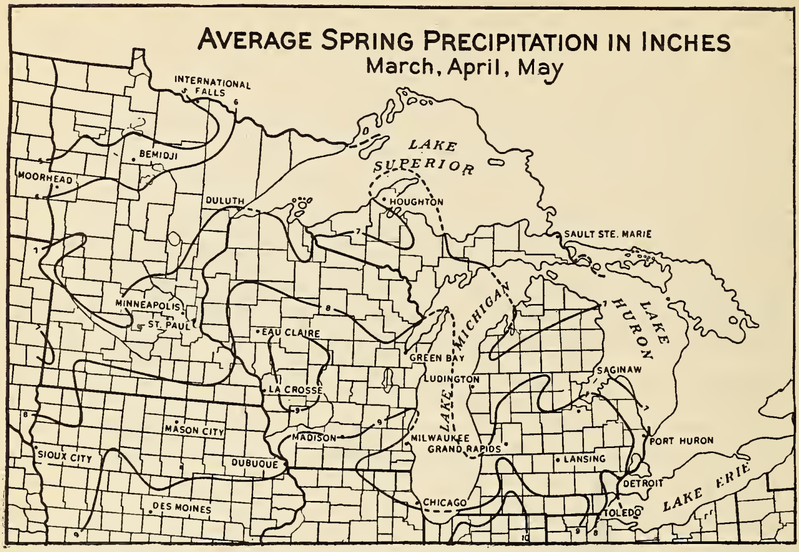

FIGURE 17.—The spring rainfall decreases consistently to the north and westward in Minnesota. (Data from the United States Weather Bureau)

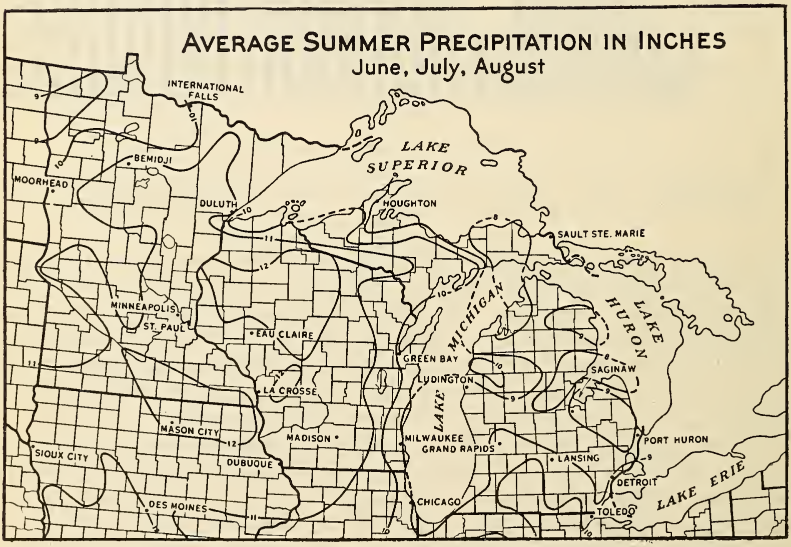

FIGURE 18.—The cut-over parts of western Wisconsin and eastern Minnesota have more summer rainfall than does either northern or southern Michigan. The difference is as great as 4 inches between localities of these States. (Data from United States Weather Bureau)

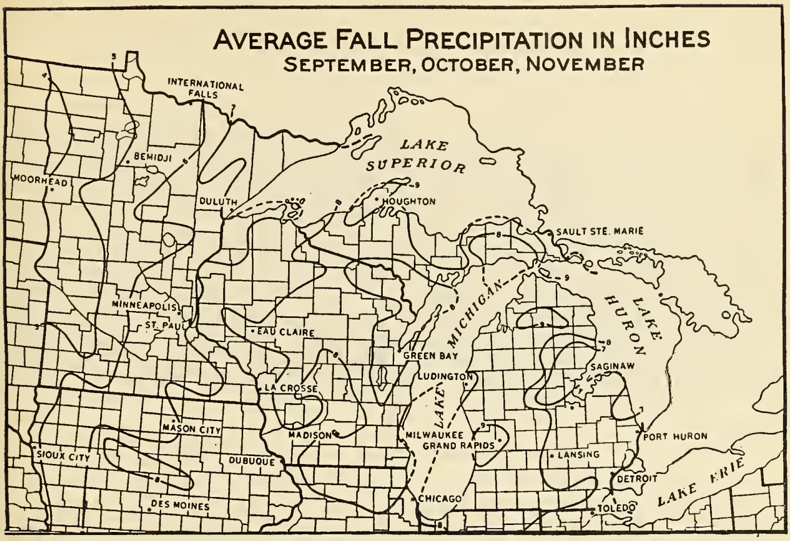

FIGURE 19.—The fall rainfall is least in Minnesota, especially in the western half. Over the rest of the cut-over region it is almost uniform. (Data from the United States Weather Bureau)

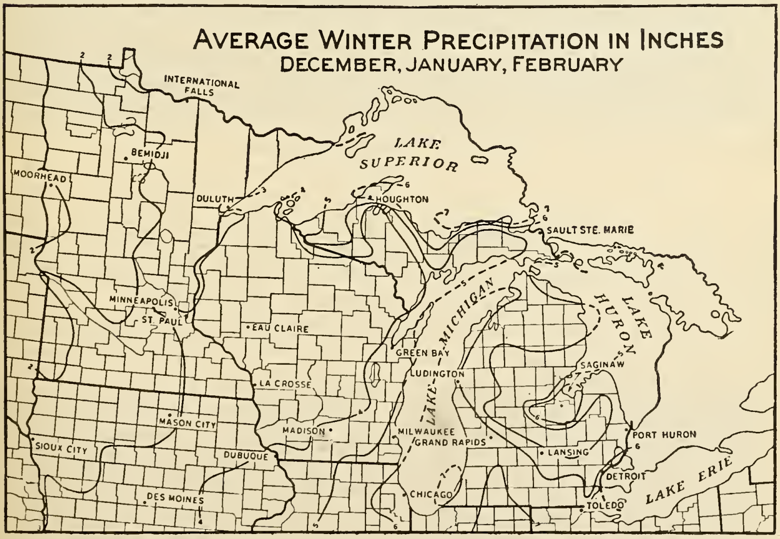

FIGURE 20.—The winter precipitation is highest near the Lakes, especially Lake Superior. It decreases rapidly in western Wisconsin and Minnesota. (Data from the United States Weather Bureau)

VARIATIONS IN SOILS AND RELIEF

Over most of the region the soils are of uneven quality. Within relatively small sections are soils of both good and poor quality. Relief, likewise, varies from level to very rough and steep.

Certain general characteristics of the soil and relief can be briefly explained by their origin. A belt including the northeastern corner of Minnesota and extending across northern Wisconsin almost to Lake Michigan (including the western part of the Upper Peninsula of Michigan) is a center or core of ancient crystalline or hard rock. Surrounding this central core and comprising nearly all the remainder of the region is a series of concentric and slightly tilted rock layers composed largely of old limestone and sandstone soil belts. Glaciers swept over nearly all of it, scouring parts of the central granite core and leaving some of it rough land with an abundance of rock outcrops, lakes, swamps, and gravelly ridges. Included are the great iron ranges—the Mesabi and Vermillion Ranges in Minnesota, and the Penokee and Gogebic Ranges in Wisconsin and Michigan.

The limestone and sandstone lands south of this central core are covered with an uneven mass of glacial débris varying from a few feet to 100 feet or more in thickness. The relief of this part of the region is generally of two types. The one type (terminal or lateral moraine relief) resulted where the débris was deposited in steep ridges and knobs and in kettle holes often containing lakes, ponds, and small swamps, with here and there a sandy outwash plain.

The other type of relief (ground moraine) consists of low, rounded swells and saucerlike depressions usually called "till plains." On these level and rolling lands are found the best farms, but drainage is often poor.

The receding glacier left several large lakes, the bottoms of which to-day are peat swamps and marshes. Agassiz Lake, now represented by a vast swamp north of the Red Lakes in northern Minnesota, was the largest of these glacial lakes.

With these varying soil and topographical conditions there are many possibilities for making mistakes in attempting to select a good farm. Abandoned farms, cleared fields reverting to brush, and run-down farm buildings scattered all through the light-soil sections of the region are frequently evidence of failures due to mistakes in the selection of soil. (Figs. 21, 22, and 23.)

One of the chief mistakes made by settlers is to judge the productivity of sandy soils too much on the basis of crops grown or growing in years or seasons when there is an abundance of rain. Likewise, heavy soils are judged during dry season when the lack of drainage is not so noticeable. The way to guard against this is to find out what kind of year it has been when the observation is made. A "land-wise" person can also judge by the more permanent vegetation on the land. Scrub oak or jack pine, for example, is an indication of poor sandy soil.

If the soil in a section is heavy, particularly if the subsoil is tight, it is important that the land have sufficient slope to give adequate drainage. Lighter soil, on the other hand, requires a fairly tight subsoil and very little slope. Some of the best land in the cut-over

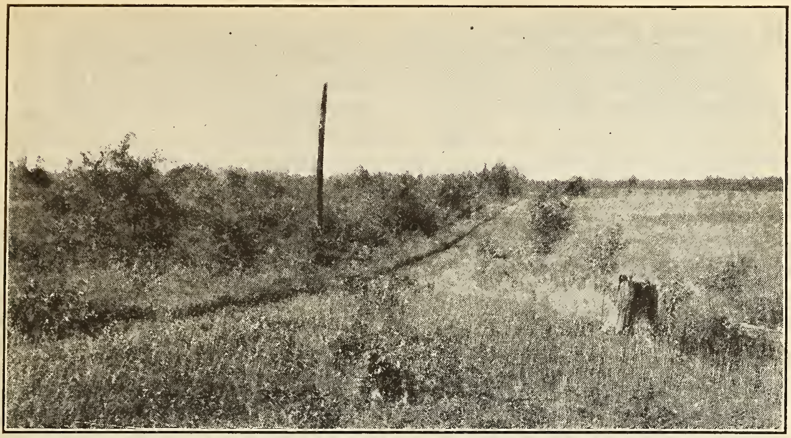

Figure 21.—A section of a town road approximately 7 miles long cut through a typical sandy section in Wisconsin along which 41 abandoned farms were counted in 1928. The cleared fields are now reverting to brush, and the owners are no longer paying taxes on the land

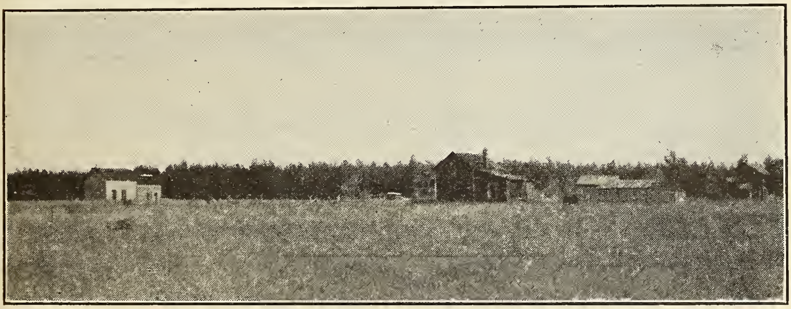

Figure 22.—Three typical farmsteads along the road pictured in Figure 21, which were recently abandoned

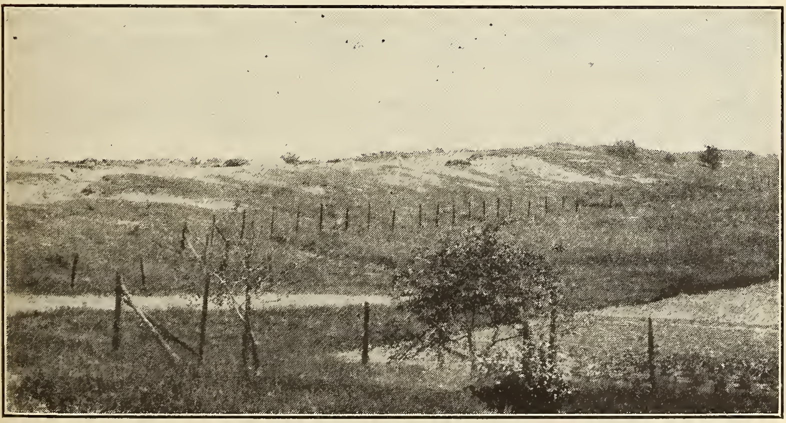

Figure 23.—A sand blow-out on a farm in Manistee County, Mich.

region has only moderately heavy soil. Such soils are classed as silt loams or sandy loams.

Another important consideration many settlers overlook is the stoniness of the land. This is evident from the fact that large acreages of land now in crops are so stony that they would not be used for crops were they located in the older farming sections farther south. Most cut-over land has more stones than settlers suspect until an attempt is made to clear the land. (Figs. 24 and 25.)

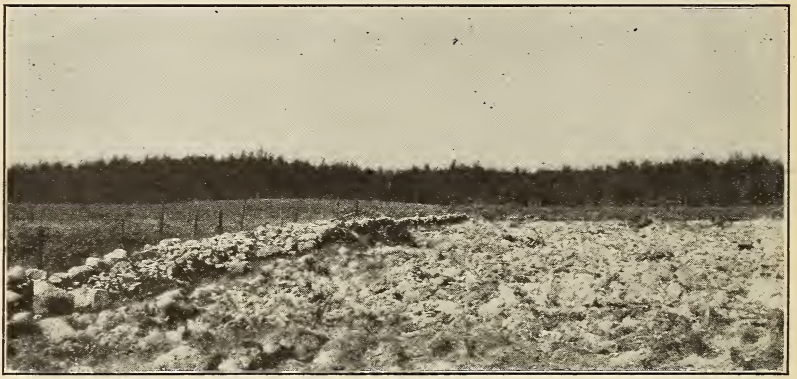

FIGURE 24.—This farm has good silt soil but is very stony. The cost of clearing land like this is more than the land is worth. Before the brush is cut and some land has been plowed it is difficult to estimate how stony cut-over land really is. Prospective settlers can well afford to spend several days examining land to avoid such fields

It must be said that throughout the region the soils have the usual deficiencies of timberland soils. For the most part they have a normal quantity of potential mineral plant food, but they are low in humus. With regard to humus content, they differ greatly from the dark prairie soils to the south and west. Moreover, in many parts forest fires have burned out much of the humus originally in the soil. Consequently, most crops do not prosper for the first few years, especially on the heavier soils.

Detailed soil maps of the entire region are not available. A number of the counties have been covered by detailed soil surveys, others by reconnoissance soil surveys, and several by economic surveys. A reconnoissance soil survey has been made in all of northern Wiscon-

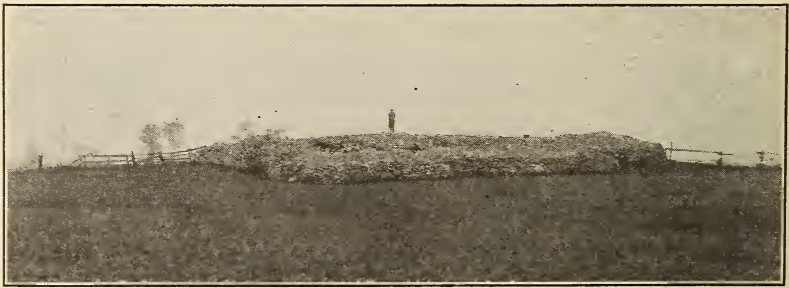

FIGURE 25.—The Polish settler responsible for collecting this pile of stones is developing a cut-over farm on land of good quality at the expense of a larger amount of labor and a lower standard of living than he had anticipated

sin, but soil conditions in northern Minnesota and Michigan are known only in a general way. Figure 26 shows the counties and localities of which a soil survey, either of the detailed or reconnaissance type, has been made. Prospective settlers will profit by carefully studying the soil reports and maps of localities in which they are interested. If such reports and maps are no longer available for distribution from the sources indicated in the legend of Figure 26, the offices shown on the map will tell the inquirer, on request, the nearest place at which a copy of the report and map can be made available for study. If the county has an agricultural county agent, the prospective settler should visit his office, which is usually located in the county seat. The agricultural county agent is an official representative of the State and the Federal Government, and he is in position to report on the value of different types of soil in his county for agricultural purposes, or can obtain the desired information. If the county has no agricultural agent, the information can be obtained from the agricultural experiment stations at Madison, Wis., or St. Paul, Minn., or East Lansing, Mich.

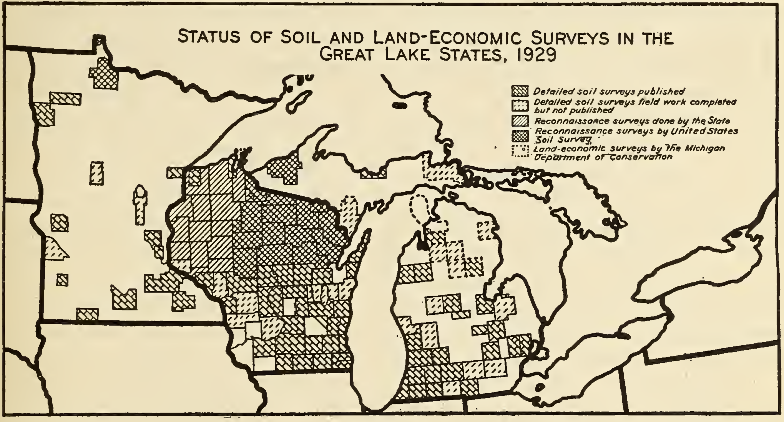
STATUS OF SOIL AND LAND-ECONOMIC SURVEYS IN THE GREAT LAKE STATES, 1929
Detailed soil surveys published
Detailed soil surveys field work completed but not published
Reconnaissance surveys done by the State
Reconnaissance surveys by United States Soil Survey
Land-economic surveys by The Michigan Department of Conservation

FIGURE 26.—A limited edition of the soil survey reports published by the Bureau of Chemistry and Soils, United States Department of Agriculture, Washington, D. C., is available for free distribution. These reports can also be obtained for a nominal price from the Superintendent of Documents, Government Printing office, Washington, D. C. The Department of Conservation, Lansing, Mich., is the source of a soil map and a cover map showing the present surface use of land in those countries in which land-economic surveys have been conducted. In Wisconsin the soil-survey maps and reports made by the United States Department of Agriculture in cooperation with the State college of agriculture are usually issued separately by each office. The State report contains some additional geological and natural-history information

AREA OF POOR SOILS FOR FARMING

The Wisconsin Agricultural Experiment Station at Madison has published a bulletin describing the soils in northern Wisconsin and classifying the upland soils under four heads—"excellent," "good," "fair," and "low" on the basis of agricultural values (*13*). Estimates of the extent of those soil types classified as having low and fair agricultural value were made for the cut-over region of the three Lakes States from an unpublished map prepared by C. F. Marbut, Chief of the United States Soil Survey, and F. J. Marschner, of the Bureau of Agricultural Economics, United States Department of

Agriculture. It would appear from these estimates that at least a third of the acreage in the 113 counties classified as cut-over on Figure 1 is characterized by poor or only fair agricultural soils. Furthermore, if all the counties in the central sandy plain of this region were included, the fraction might easily be stretched to one-half.

In a hasty survey of 92 of the 113 counties classified as cut-over in Figure 1, the United States Department of Interior designated 24,600,000 acres as unoccupied cut-over land (*12*). Of this total area, 57.4 per cent (14,120,400 acres) is classified as suitable for agriculture, and 21.4 per cent (5,264,400 acres) and 21.2 per cent (5,215,200 acres) were classed as forestry and grazing lands, respectively. Since a large proportion of the acreage classified as most suitable for grazing is described in the Wisconsin bulletin as "poor" farming land it may be assumed that the comparable nonagricultural land acreage estimate would be about 42.6 per cent.

Estimates of land needing drainage made by the Department of Agriculture indicate that 6,755,000 acres in Minnesota need drainage and that most of this land is in the northern part of the State. A similar estimate for Wisconsin is 5,123,000 acres, most of which is in the southern part of the State. The estimate for northern Michigan is 2,835,000 acres and for southern Michigan 2,878,000 acres.

The figures presented thus far are by no means final; they are given to emphasize the importance of studying soil conditions carefully when selecting a farm in the cut-over region of the three Lakes States. They lead to the recommendation that the would-be settler should list the acreages of the different types of land in any tract he is considering. All land that is especially stony or rough, or that needs drainage, should be considered as being in the nontillable group because it will be a long time before it will be economically advisable for the settler to improve such land, if he ever does. A small acreage is not objectionable in a cut-over farm having some better land provided the price is adjusted accordingly. Land that is very stony or rough may make a good permanent pasture or wood lot. Likewise, land that is somewhat low may make good pasture in dry years or be the source of wild hay. Studies in land valuation have demonstrated that having more than three-fourths of the farm acreage in plowable land increases the average value per acre very little. Since such land can be used to advantage, the settler should not object to a small acreage of untillable land.

FOREST AND CROP PRODUCTION

Without a very careful economic analysis it can not be said that any given piece of land, particularly any tract that has soils of only moderate fertility, is better suited for farming than for some other use. Changing economic conditions cause the prices of crops, livestock, and timber products to rise or fall relative to each other. Consequently, the most profitable use of particular tracts of land varies from time to time. Improvements now being made in methods of utilizing peat and sandy lands may completely change the use to which a portion of such land can be put to best advantage.

A concentration of abandoned farms and tax-delinquent lands in areas where peat and sandy soils predominate suggests rather emphatically that there is little if any economic justification for attempting to use such lands for farming purposes for many years to come. In view of the lack of an economic need for more farm land of any kind for at least 10 years (see section of this circular under heading—General Outlook for Land Settlement in Undeveloped Regions), there is little question that the immediate use of these poor soils is not farming.

COMPETITION BETWEEN FORESTRY AND CROP PRODUCTION

The most important use of land that competes with crop production is forestry. The Forest Service estimated that in 1920 the area of potentially productive forest lands of the United States, not including Alaska, was approximately 469,000,000 acres, or 25 per cent of the total land area. This includes about 138,000,000 acres of old-growth timber, 114,000,000 acres of merchantable second growth, 136,000,000 acres of cut-over or burned-over land more or less stocked with young trees, and 81,000,000 acres of "idle" land from which the forest has been removed by fire or cutting but which has neither been put to use nor restocked with trees. In addition, there are some 75,000,000 to 80,000,000 acres of open woodland, chiefly in the Southwest, covered with scrubby growth of little or no commercial value. It has also been estimated that our present rate of wood consumption is almost four times the rate of growth. At this rate of consumption we shall use up our virgin timber and catch up with our growing timber within 30 to 50 years. Furthermore, it is estimated that only a small proportion of the potential crop land of the Nation will be required for cultivation. The effect of these conditions will be to emphasize the desirability of keeping land in growing timber in place of clearing it for crops.

The total area of forest and cut-over land in the three Lakes States has been estimated to be about 57,100,000 acres. The percentages of this area in each of the three States that (1) is still in virgin timber, (2) has a merchantable crop of second growth, (3) is covered with small second growth, and (4) is barren land or land that is not restocking with any degree of effectiveness, are given in Figure 27. The future of the land that is not restocking is very uncertain. No doubt timber growing is the most probable use for most of it, but some time may elapse before the necessary measures are taken to grow timber on it. Eventually much of the second growth will go back to forest, but part of it will probably be improved and cropped or pastured.

In those sections in which there is a local market for timber products, it will be a great advantage to the settler to have merchantable timber on part of his holding. This is particularly true if the prospective settler has a choice of a holding with such merchantable timber with little or no additional cost. Such timber may be an important source of income during periods when ready cash is needed and work off the farm is not available. Hence, the timber and the market for it should be examined carefully. Local buyers of timber products can be interviewed to learn the prices paid and quantities handled of each of the marketable classes of timber on a particular farm.

A special circumstance that favors forest use is the growing importance of recreation in the cut-over region. An increasing area of land in the cut-over region is being set aside each year for parks, summer homes, and lake resorts, and the fact that recreational and forest uses can be combined on the same land to better advantage than recreational and agricultural uses favors this tendency toward forests.

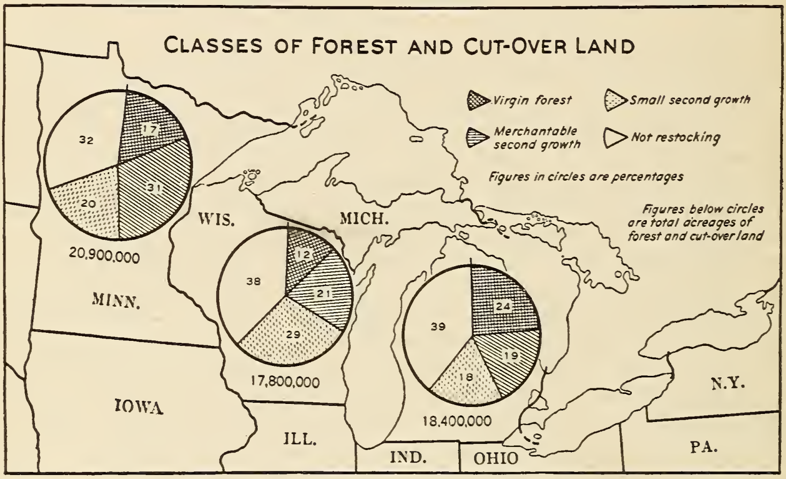
CLASSES OF FOREST AND CUT-OVER LAND
Virgin forest
Small second growth
Merchantable second growth
Not restocking
Figures in circles are percentages
Figures below circles are total acreages of forest and cut-over land
32
17
31
20
20,900,000
MINN.
WIS.
38
12
21
29
17,800,000
MICH.
39
24
19
18
18,400,000
IOWA
ILL.
IND.
OHIO
N.Y.
PA.

FIGURE 27.—These figures are for the States taken as a whole and not for what has been called the "cut-over" region in the circular thus far. The proportions would not be greatly changed, however, if the southern portions of the three States were excluded. (Estimates by Forest Service)

CLEARING LAND FOR CROP PRODUCTION

In competition between different uses of cut-over land, the labor and expense of clearing the land of its stumps and stones are important considerations. It is easier and cheaper to let the land grow up to trees again than to remove the brush, down logs, stumps, and stones in preparation for crop production. Although the settler may be interested in growing timber on a small wood lot, his primary concern is in crop land. The problem of land clearing must therefore be considered by present and prospective settlers.

The labor and expense of clearing land vary widely. Factors that affect the expense include: Type of timber growth as determined by species of trees, density of stand, and diameter of trees; condition of timber growth as influenced by previous cutting and burning; method of clearing; conditions under which the clearing is done; and type of land. The type of land is an important consideration, for light soils lend themselves best to certain clearing methods and heavy soils to other methods; and the water content of the soils is important in facilitating the removal of stumps.

Much of the land in this region is difficult to clear, either because it is stony or because it contains many stumps of slow-rotting coniferous trees; frequently both reasons exist. On most of the land a covering of brush or second-growth timber adds to the difficulties. To prepare land for crop production, the brush must be cut and removed, along with down logs, stones, and stumps after they have been pulled or blasted. Next the land must be leveled and plowed. Rather than complete all these operations before cropping a field, many settlers remove the brush and down logs and then pasture the field, or use it for meadow or even for crops over several years, to give the stumps and roots a chance to rot somewhat.

Stumps are commonly extracted by pulling, by blasting, or by a combination of the two methods. Stump pullers range from small hand-power machines to large machines that operate under their own power. Stump burning is frequently combined advantageously with other clearing operations.

Clearing may be done on contract or by using hired labor, or it may be done by the proprietor and the members of his family at odd times when there is little other work to do. As a matter of fact, the settler's family usually does most of the clearing.

A number of studies have been made of clearing land in the cut-over region of the Great Lakes States, but only a brief summary of some of the results of a few of these studies is given here. Those especially interested in details should consult the bulletins in which these studies are reported.

McGuire (*6*) in 1913 presented data on clearing done under hired-labor conditions, with men and teams working 10 hours per day and with a free use of explosives. The plot contained 8.7 acres of land that had been logged three years previously. The timber growth on this plot consisted of jack pine, poplar, Norway pine, white pine, and mixed hardwoods. There was an average of 104 stumps per acre; the stumps had a mean diameter of 16.6 inches. Clearing this land at one operation required 4.24 days per man per acre. In addition to this labor, 116.8 pounds of 27 to 60 per cent dynamite was used per acre. These figures do not allow for stone removal, if required, or for leveling and breaking the land.

Thompson and Strait (*8*) in 1914 reported the clearing of 20 tracts of cut-over land in the Great Lakes States. All tracts except one (No. 20) consisted of white pine stumps. The man labor used in pulling each stump varied from 8.8 to 78.2 minutes, depending upon the size of the stumps, the type of soil, condition of the land, the experience of the crew, and the amount of horse labor used. The authors of this bulletin concluded that the work of piling and burning stumps is about equal to that required for pulling the stumps. Consequently, the time for pulling must be doubled to get the time for clearing the field of the stumps. The authors also conclude that the work of extracting white and Norway pine stumps is about the same whether the trees have been cut 5 or 25 years.

Thompson (*9*, *10*) reported the experimental clearing of three 5-acre tracts of land, the first by the use of dynamite entirely, the second by splitting the stumps with light charges of dynamite before pulling, and the third by logging and brushing and then pasturing for five years before extracting the stumps by blasting, by pulling, and by a combination of both methods. The first two tracts ran more than 200 stumps per acre, the stumps averaging 12 inches in diameter at the base. The timber had been cut recently, and the clearing was essentially green. The soil was clay and somewhat stony, and the clearing crew was largely inexperienced.

On tract 1 it required eight and twenty-four one hundredths 10-hour days of man labor and 3.78 days for a team of horses to clear an acre of stumps. An additional 1.3 days were required to clear and pile the dead and down timber from each acre. Low-grade dynamite was used on all except the green birch stumps. The cost of the explosives at that time amounted to $24 per acre.

Tract 2, which was cleared by splitting the stumps with dynamite and then pulling them, required fifteen and sixty-seven one hundredths 10-hour days of man labor and 8.56 days for a team of horses in addition to the 1.3 days required to pile the dead and down logs on each acre. This method of clearing saved about $15 per acre for dynamite cost but required 7.43 more days of man labor and 4.78 more days for a team of horses per acre than did the method in which dynamite was used exclusively.

Tract 3 had enough timber on it, before it was brushed and logged, to furnish an average per acre of 2.05 cords of hardwood (mostly birch), 9.3 cords of softwood (mostly balsam), 1,200 feet of lumber (mostly pine), and 12 fence posts (mostly cedar). The tract averaged 314 stumps per acre, two-thirds of which were green.

After this tract had been pastured five years, 66 per cent of the stumps was pulled by a man and team with a direct hitch to the stump. The remaining stumps in one part of this tract were extracted with dynamite. Clearing by this method required an average per acre of 7.11 ten-hour days of man labor and 6.19 days' work with a team in addition to 1.44 days with man and team to clear the field of dead logs and other refuse material.

Stumps from the remaining part of tract 3 were extracted with a puller and dynamite at a cost per acre of eight and seventy-nine one hundredths 10-hour days of man labor and 4.36 days work with a team, in addition to the 1.44 days with man and team to pile down logs and débris. The use of a stump puller along with explosives, therefore, required 1.68 more days of man labor but 1.83 less days of labor with a team than when dynamite was used alone. The combination of puller and dynamite had the added advantage of using less dynamite.

Both methods used in clearing tract 3, however, were found to require much less team and man labor than did the methods used in clearing tracts 1 and 2. If land can be brushed and used as pasture before stumping, as in tract 3, the cost of clearing is greatly reduced. But unfortunately, the settler must have some crop land during his first years, which means clearing at once, even if the stumps are green, or raising crops between the stumps, which is wasteful of human energy and patience.

The costs and time required to clear land, as given in this circular, will not exactly fit the clearing done under different conditions from those under which these experiments were conducted. The few summary figures here given are valuable only in so far as they furnish the settler with a general idea as to what he has to face when clearing land. The usual settler will employ more time than is here indicated, but will do the work at times when his labor or that of his children has little alternative-use value. Actual costs under such circumstances are much less than if labor is hired.

Available data relating to brushing and other work preliminary to stumping are not adequate. Time required for such work varies even more than for stumping. Thompson and Strait (*8*) estimate the cost of brushing and piling fallen logs at from $5 to $25 per acre, as compared with $20 to $90 for stumping, figuring both at hired-labor rates prevailing in 1914.

Likewise, no data are available regarding the work of leveling the land after the stumps have been removed. Most cut-over land is uneven before the stumps are pulled, and pulling the stumps leaves deep holes that must be filled at the cost of much labor. Although holes resulting from the use of dynamite are somewhat smaller, they must be filled. After leveling comes the breaking, which is a slow and difficult process.

A large part of the cut-over region is stony, and some of it is too stony to justify clearing. The labor required to remove stones may range from a few hours to many times more than is required for all other clearing operations combined.

In the first clearing a settler makes, the easily cleared patches adjacent to the farmstead should be chosen to provide for a large garden. It is not essential that large white pine stumps be removed at the start because garden and root crops and even hay can be grown among them. After a year or two, however, it will pay to remove them.

After the first few years of settlement, many observers agree that the best procedure is to brush the land, sow with grass seeds, and pasture it or use it for meadow for a few years before attempting to remove the stumps. Hardwood stumps will rot enough in a few years to cut the stumping labor in half (*8*).

There is a difference of opinion as to how soon this procedure should be adopted. Some advocate beginning at once, and others urge getting 8 to 10 acres cleared first. Type of land and kind of clearing are important factors in determining which is the best policy. In light soils with easy clearing, it is probably best to clear land completely, whereas in heavier soils with more difficult clearing, it may be advisable to wait a few years, growing hay or pasturing between stumps in the meantime.

PRINCIPAL CROPS OF THE CUT-OVER REGION

The potato forms the principal cash crop of the cut-over region. The crop is in many respects well adapted to pioneer farming. It is suited to the climate; it utilizes advantageously a large part of the settler's labor upon the few acres of land that have been cleared; it gives a large product per acre; and it can be grown among the stumps and upon new land with more success than almost any other crop. Settlers will benefit, therefore, by devoting as large an acreage as can be spared to potatoes or other intensive crops. In some years the price and yield of potatoes are low, but year-in and year-out as good a return for labor will be obtained from potates as from almost any crop that can be grown in the region except in localities that have a cold heavy soil. In fact, the available labor of the settler probably would not be so fully employed if potatoes were not grown.

The potato crop (fig. 28) is the only crop grown in the three Lakes States besides hay (fig. 29) that increases in relative importance northwardly. Most of the cut-over region is better adapted for this crop than are the southern parts of the three States and the Corn Belt; the special advantage is a cooler growing season. The region also has an abundance of fairly light soils well suited to potatoes. Potatoes are grown where the land is sandy partly because dairying is less successful there since meadows and pastures are poor, and partly because potatoes do best on fairly light soils. Important disadvantages of the region for this crop are long hauls to consuming centers, early frosts, especially in the northern part, and the occasional drouths at critical periods in late summer.

The cut-over region will probably always grow potatoes in considerable quantity, but it will never prosper exceedingly from the practice, for in the United States there is much more land that is not well suited to growing other crops than will ever be needed for growing potatoes. This means that the average price level for potatoes, tends to be relatively low.

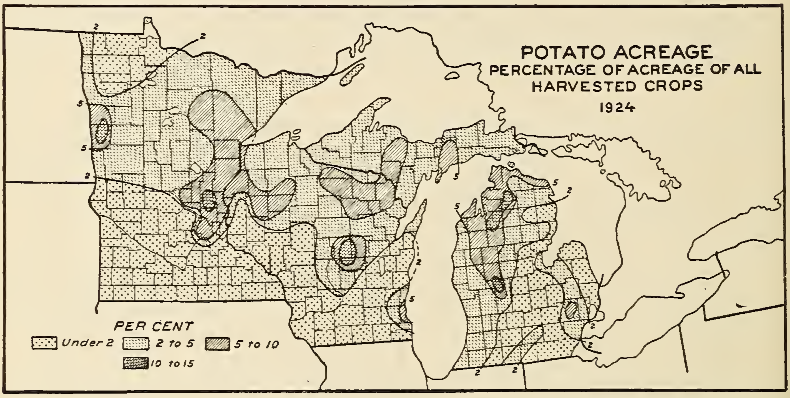

FIGURE 28.—Potato acreage in these States was at its peak in 1919. Since then it has decreased greatly, but there are at least 20 cut-over counties in which over 5 per cent of the crop acreage is planted to potatoes. This is a relatively high percentage for an intensive crop. Like the rye crop, potatoes can be grown on the lighter soils better than can most other crops. (Based on the census)

The main crop of the cut-over region is hay, a considerable proportion of which is wild hay. (Fig. 29.) The percentage of crop land in hay ranges from 30 per cent on the southern and western edge of the three States and in the sandy counties to over 70 per cent in the counties that are least developed. Hay is important in the region because it will grow on land deficient in humus, on land that is full of roots, on poorly drained land, and in small patches between stumps and stones. The crop is needed as winter feed for horses and cattle; consequently the wise settler sows grass seed on all open spaces from which hay can be harvested by machine or by hand. As the cut-over farms become better developed, less land is usually devoted to hay and more to other crops.

The hay crop represents a smaller value per acre than do many other crops, either as a feed or a cash crop, and there is an abundance

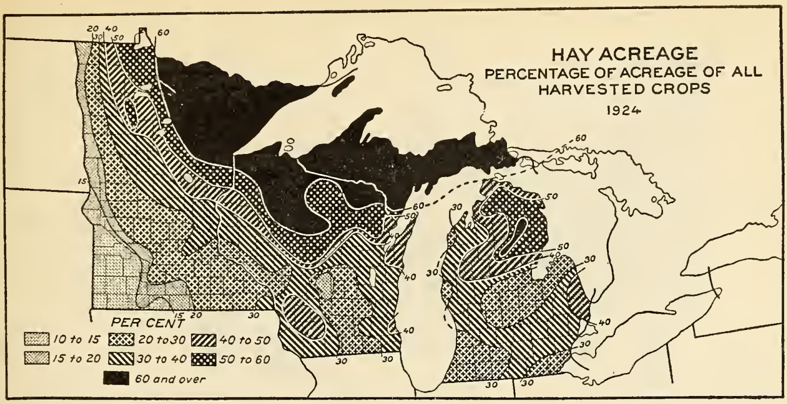

FIGURE 29.—In the newest counties farthest north, hay is almost the only crop grown, and much of it is cut with the scythe between stumps and in small patches of clearing. (Based on the census)

of hay land in the country. Therefore, land suitable principally for the growing of hay is not likely to be very valuable.

Oats form the principal small grain crop over the entire cut-over region with the exception of one or two sandy sections where it is second to rye. (Figs. 30, 31, 32.) In several Wisconsin cut-over counties nearly a fourth of the crop land is in oats. The oats are grown as feed for horses and cattle and are usually harvested as hay, particularly in very new areas. The fact that oats can be fed without threshing is one reason why they are grown more than rye or wheat.

The oat crop does as well in this region as in the southern part of the three States or even in the Corn Belt, or better. Here again, however, is a crop that usually represents a low value per acre, for throughout the world there is a great acreage for which oats is the best adapted cereal. The northern half of the Corn Belt grows oats largely because it must have some small-grain crop, and oats fit into

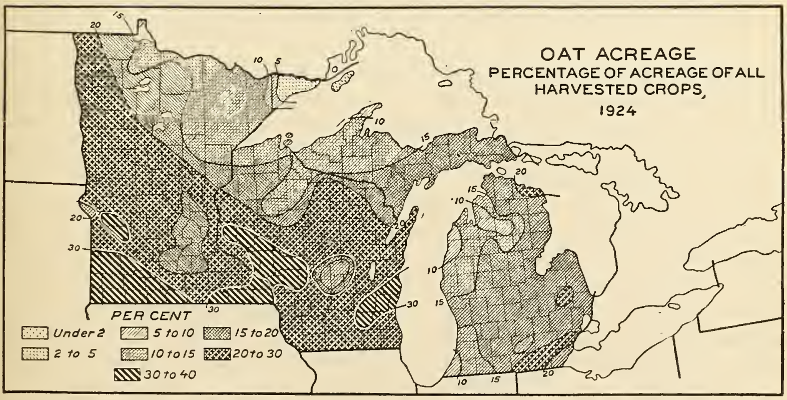

FIGURE 30.—In most of the cut-over counties between 10 and 20 per cent of the crop land is in oats. In the newest counties much of the crop is never threshed. The oat acreage decreases in the very sandy sections. (Based on the census)

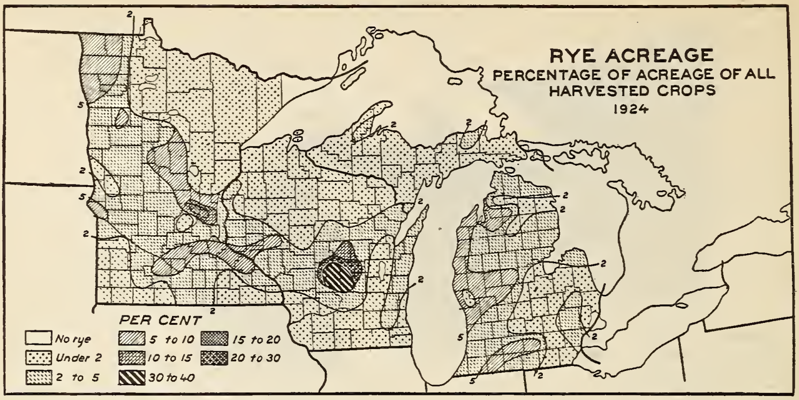

FIGURE 31.—The rye acreage follows the sandy soil rather closely. Only in a few scattered localities was the acreage of rye, in 1924, over 5 per cent of the total crop area. Part of the rye crop is sold as a cash crop. (Based on the census)

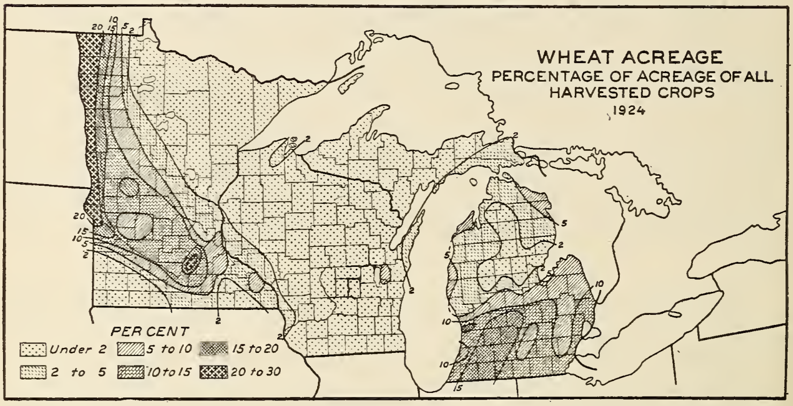

FIGURE 32.—The wheat acreage consists of spring wheat in western and northern Minnesota and Wisconsin and of winter wheat in southern Michigan. In only a few cut-over counties of Minnesota and Michigan was the wheat acreage over 5 per cent of the total crop area in 1924. (Based on the census)

the farming system better than does any other small grain. If Corn Belt lands were valued on the basis of their oat yields, however, they would be less than half as valuable as they are now considered to be.

Corn needs hot sultry weather both day and night in July and August; consequently the cool spring months, cool summer nights, and early frosts in the fall, so peculiar to the cut-over region, are important handicaps in the growing of corn. But corn is the most important crop to-day in the agricultural economy of the older portions of Minnesota, Wisconsin, and Michigan. This fact is made clear in Figure 33, which shows the percentage of the acreage of harvested crops in 1924 that was in corn. In about one-third to one-half of the three States over 20 per cent of the crop area was in corn in 1924. In a large part of the cut-over area, however, less than 5 per cent of the crop area was in corn, and in very little of it did the acreage exceed 15 per cent.

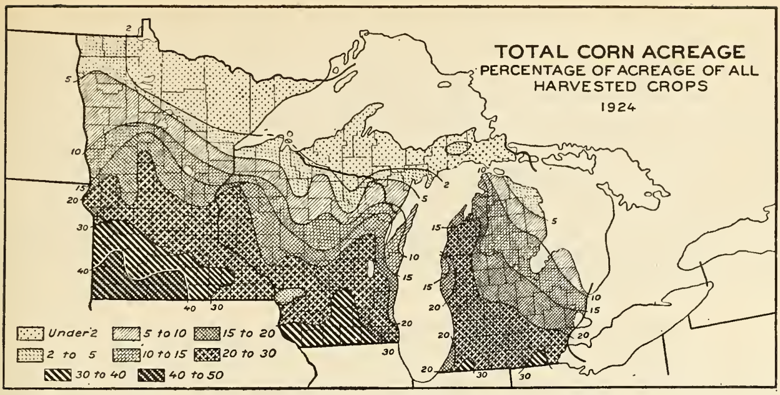

FIGURE 33.—The corn lines, in general, trend northwestwardly but bend down on the west shores of the Lakes and in sections of higher altitudes. Even for silage, corn is apparently a somewhat doubtful venture north of the 5 per cent line, and is more doubtful north of the 2 per cent line. (Based on the census)

The corn grown in the cut-over region is mostly put into silos or fed green to dairy cattle. In only a very small part is more than 5 per cent of the crop harvested for grain. (Fig. 34). Consequently, it provides feed for hogs or beef cattle only to a limited extent.

A usual mistake made by settlers is to attempt to grow crops that are suited to the community from which they came, instead of growing the crops that are adapted to the cut-over region in which they locate. Regardless of advice from older residents, new settlers often insist upon trying to demonstrate that their favorite crops can be grown. The corn crop is a usual subject of such experiments. Crop land on a cut-over farm is too limited and valuable because of scarcity to be employed in such experimenting. Even assuming that the growing season and climate were favorable, new land is often too deficient in humus to produce good corn. Hay grows best on such land, and since the need for hay is urgent, settlers can not usually afford to experiment with corn.

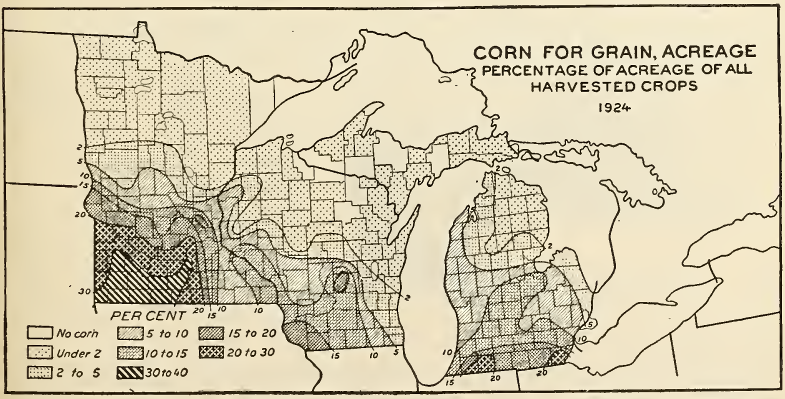

FIGURE 34.—Only in a few of the southernmost of the cut-over counties is any of the corn husked, and these are nearly all counties with predominantly sandy soils. (Based on the census)

Although corn can be grown with some degree of success in several of the cut-over counties, the crop will not mature as often, by long odds, as in the southern parts of Minnesota, Wisconsin, and Michigan. If this region had to depend upon corn as a main crop, it could not prosper greatly, for corn can be grown to so much better advantage over the comparatively large area represented by the Corn Belt States. This means that the extent of land available elsewhere for growing corn (or any other crop) and the quantity of the crop that will be consumed at a particular price determines whether corn or some other crop shall prosper in this region fully as much as does the climate and soil of the region.

IMPORTANCE OF DAIRYING IN THE FARM ECONOMY

The cut-over region is in the hay, pasture, and dairy belt of the United States. The system of crop farming that predominates and that probably will continue to predominate, is dairying, with hay, oats, and barley for feed crops, supplemented by silage corn in half or two-thirds of the counties. There are several reasons, however, why the land of this region may not be found so valuable for dairy farming as that of central and southern Minnesota and southern Wisconsin: The yield of silage corn, which is an important part of the dairy economy, is lower; corn for grain is a far less certain crop; and the summer growing season is shorter and the winter feeding season longer.

The comparative value of dairy products in the different sections of each of the three States is roughly pictured in Figure 35, but this map underestimates the real importance of dairying in the cut-over region as compared with the rest of these States because so much of

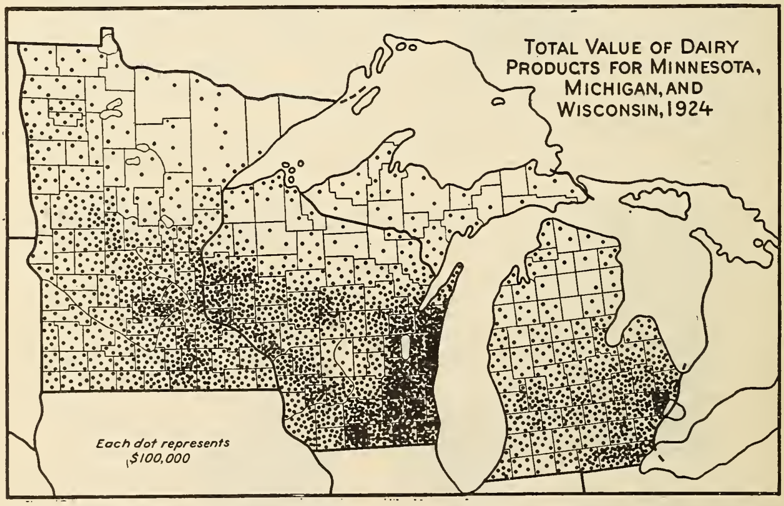
TOTAL VALUE OF DAIRY PRODUCTS FOR MINNESOTA, MICHIGAN, AND WISCONSIN, 1924
Each dot represents $100,000

FIGURE 35.—Although dairying does not appear especially important in the cut-over counties on the basis of total value of dairy products, it is very important on the basis of percentage of income. Much of the land in farms in these counties is still covered with brush and trees and therefore makes poor pasture. (Based on the census)

the land is not in farms and much of the land in farms is still in timber and brush.

When the number of cows per 100 acres of improved land is calculated, northern Wisconsin, northern Minnesota, and the Upper Peninsula of Michigan show as intensive dairy farming as do the southern parts of the States. (Fig. 36). But this slightly overstates the importance of dairying in sections of the cut-over area partly because the large acreage of woodland pasture does provide some feed, and probably also because settlers have a tendency to overstock their farms. The latter practice often results in high feed bills, poorly fed animals, and sale of animals at sacrifice prices when feed is low in the spring.

Unless the settler purchases a holding with several cleared acres, one milk cow is enough the first year. Some 2,000 settlers visited in the three Lakes States, during this study, averaged 2.2 cows during the first year, 2.4 the second, and 2.9 the third year. This slow increase is evidence that the settlers usually start with too many cows. Other data obtained indicate that an average holding having 20 to 25 acres cleared and also 6 or 8 acres of brushed pasture can support 4 milk cows and 3 head of young cattle. Farm units on heavy soils will support more cows than the figures indicate, but holdings on light soils will support fewer cows.

Although the map in Figure 37 showing the average value of dairy products per farm by counties in each of the three States, slightly understates the importance of dairy farming in the cut-over region as compared with the more developed sections of the States, it gives a concrete picture of the situation. In practically all of the cut-over counties the receipts per farm from dairy products were less than $400 per year. Four hundred dollars, however, is a large percentage of the receipts received by settlers from all sources. (Table 7, p. 56.)

The dairy economy of the cut-over region is in many ways distinctive. Prices received are usually rather low. The creameries have high manufacturing costs per pound of butterfat because of small volume handled. Farm-made butter always sells at a comparatively low price, and cream-buying stations pay on the basis of cream in poor condition. Receipts per cow on 404 holdings in Minnesota in 1918–19 averaged only $54 per cow, plus the value of milk, cream, and butter used by the settler's family. These receipts are low partly because of low prices received and partly because of low production per cow. The cows probably did not average 140 pounds of butterfat. In part, this means that the cows were naturally poor producers and that they were underfed. The usual statement is that settlers can not afford to keep anything but the best cows because of the high prices for feed, and that there is no use to keep any cows unless they can be fed properly.

But the dairy cow in the cut-over country must also be looked upon as market for the hay and other roughage that can be grown on the holdings and a means of obtaining some money return, even though small, for the labor that is available. A cow will not produce very well if fed only what can be grown on a holding for the first few years; but the little that is produced represents income that otherwise would not be available. The settler should be encouraged to grow

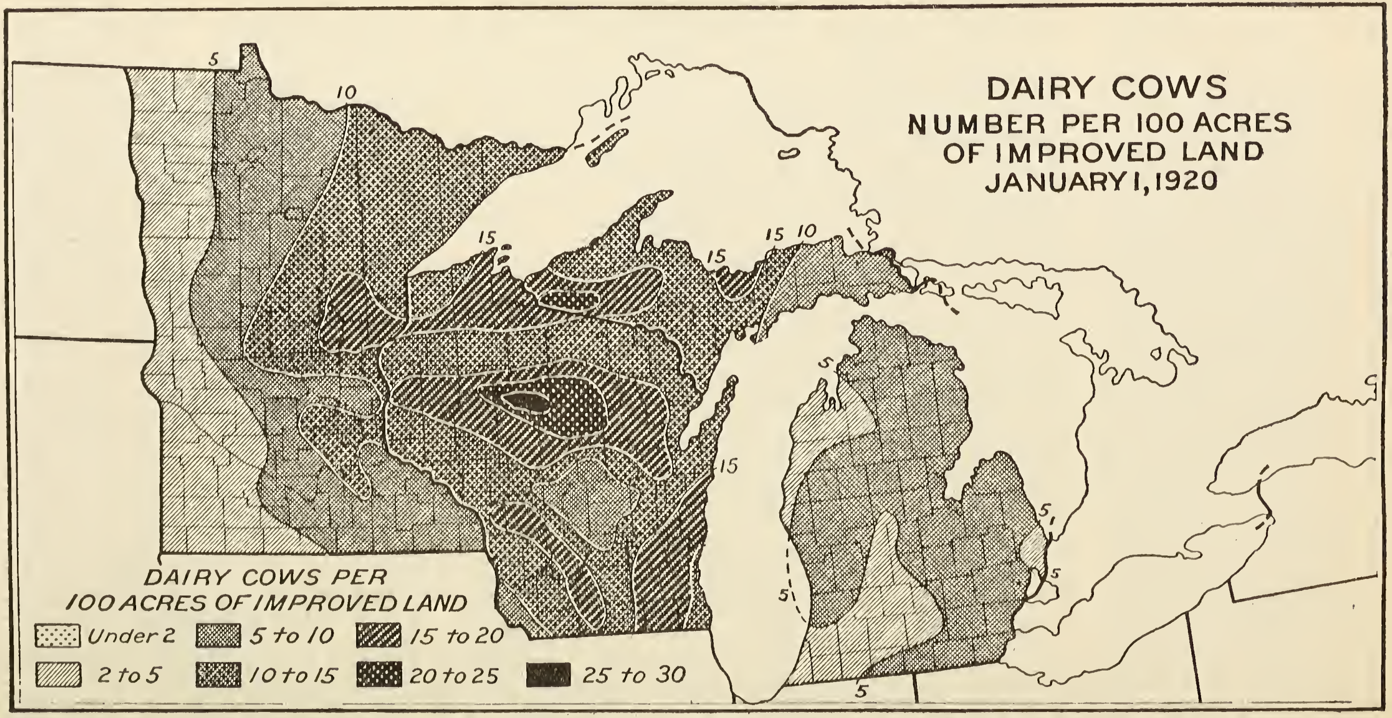

FIGURE 36.—As the last map understates the importance of dairying in the cut-over area, this one overstates it because of the small proportion of the total area that has been cleared. Dairying is less important in the sandy counties. (Comparable data not obtainable from 1925 census)

root crops, and silage to supplement hay in the ration, providing his holding is not too far north. He should also be encouraged to grow clover and other legumes to provide protein in the ration. A little later, when more cleared acres are available, he can grow small grain to balance the roughage ration. But just how far it is advisable for him to go in buying bran and other concentrates to supplement the home-grown feeds in order to increase production per cow from an average of 140 pounds to 200 or more pounds is not clear. The relatively high prices prevailing in the cut-over region for such feed and the low price paid for the product makes this question doubtful. A small quantity of concentrates added to a roughage ration adds tremendously to production; a larger quantity adds proportionately less; and the point at which the additional product no more than equals the cost of larger additions of concentrates to the ration is probably reached earlier than most settlers suspect.

Except in the case of experienced dairymen with ample resources, it is not advisable for settlers to buy high-priced milch cows. The conditions under which cows produce most economically in the cut-over country, the kind of feed, shelter, and care available, and the prices paid for the product do not justify a settler in meeting the bids of dairymen who are better situated for handling high-priced animals.

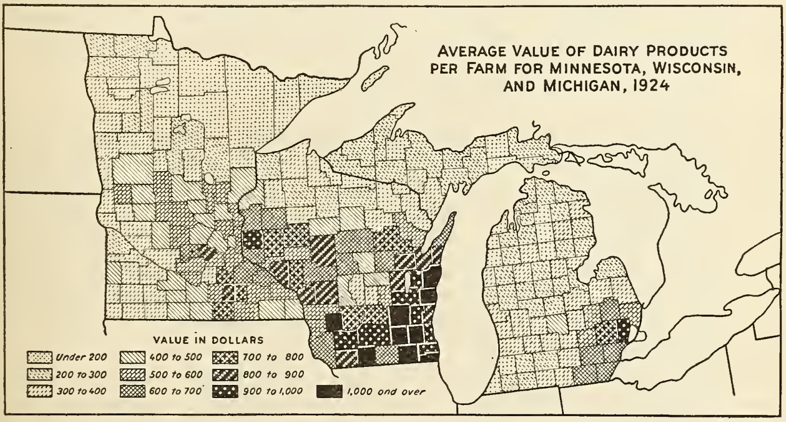

FIGURE 37.—Considering that dairying is the predominating type of farming in most of the cut-over counties, the relatively small income received from the sale of dairy products suggests the small-scale farming operations and the low aggregate money incomes per farm, typical of the region. (Based on the census)

TENDENCY TOWARD OVERSTOCKING NEWLY SETTLED FARMS

The most frequent mistake made by settlers with respect to livestock is to try to carry too much livestock before enough acreage is cleared to grow the necessary feed. This tendency is true not only with respect to dairy animals, but to swine, poultry, and horses.

In the early stages of settlement a pig or two can be grown to advantage each year for meat for the family. Settlers can generally afford to produce swine for market only after their holdings are developed so far that they have more skim milk than can otherwise be used to advantage, besides acreage to grow barley, rye, and perhaps some corn for feed.

Neither does it pay, until feed is more abundant, to raise more poultry than enough to provide the family needs. A little surplus feed can be utilized more economically with a few hens than with other types of livestock; poultry flocks should therefore be acquired rather early. Commercial poultry production, except under unusual circumstances such as nearness to good local markets, will not compete successfully with that of areas farther south and nearer large consuming centers.

Buying feed for a horse is an expense that the settler can ill afford at the start. In the first year of settlement some 2,000 settlers in the cut-over region averaged 1.3 horses. That this represents more horses than are advisable is indicated by the fact that the cut-over farms averaged 2 horses only after the tenth or twelfth year when 30 to 35 acres were cleared and an additional 6 to 8 acres were brushed. The settler should have some means of getting to town once in a while. One horse will serve that purpose and also be a great help in clearing land. For plowing and other team work, two settlers can hitch their horses together to make a team and thus exchange work or use of the extra horse.

SOCIAL AND BUSINESS ASPECTS OF THE REGION

Certain economic and social conditions peculiar to the cut-over region should be taken into consideration by prospective settlers.

RAILWAY FACILITIES

Most of the principal railway lines run past rather than through the region. (Fig. 38.) The Wisconsin and Minnesota lines run mostly from Chicago and Milwaukee northwestward through Minneapolis and St. Paul. The principal exceptions are the grain and iron-ore lines centering at Duluth and Superior, and the lines centering at Sault Ste. Marie, one of which connects with Minneapolis, St. Paul, and the western traffic. There are also two lines connecting the mining district of the Upper Peninsula of Michigan with Milwaukee and Chicago.

Although a large part of the region that is not on the natural line of through traffic between large cities and large areas has many branch railway lines to-day, the mileage of such branch lines is decreasing. These roads depend mainly on traffic from the timber, which has been or is being depleted rapidly. With the shortage of freight tonnage many of these branch lines run in the winter only or on irregular schedules. Hundreds of miles of such lines have been abandoned, and since a large part of the region is no longer producing timber there is little question that other lines will be abandoned in the future. Prospective settlers can not afford to locate on a line that is likely to be abandoned.

That part of the cut-over region that is not far removed from the Great Lakes has excellent water transportation during the eight months of the year when these Lakes are open to navigation. These water routes (fig. 38) compensate, in a general way, for the somewhat inadequate rail service.

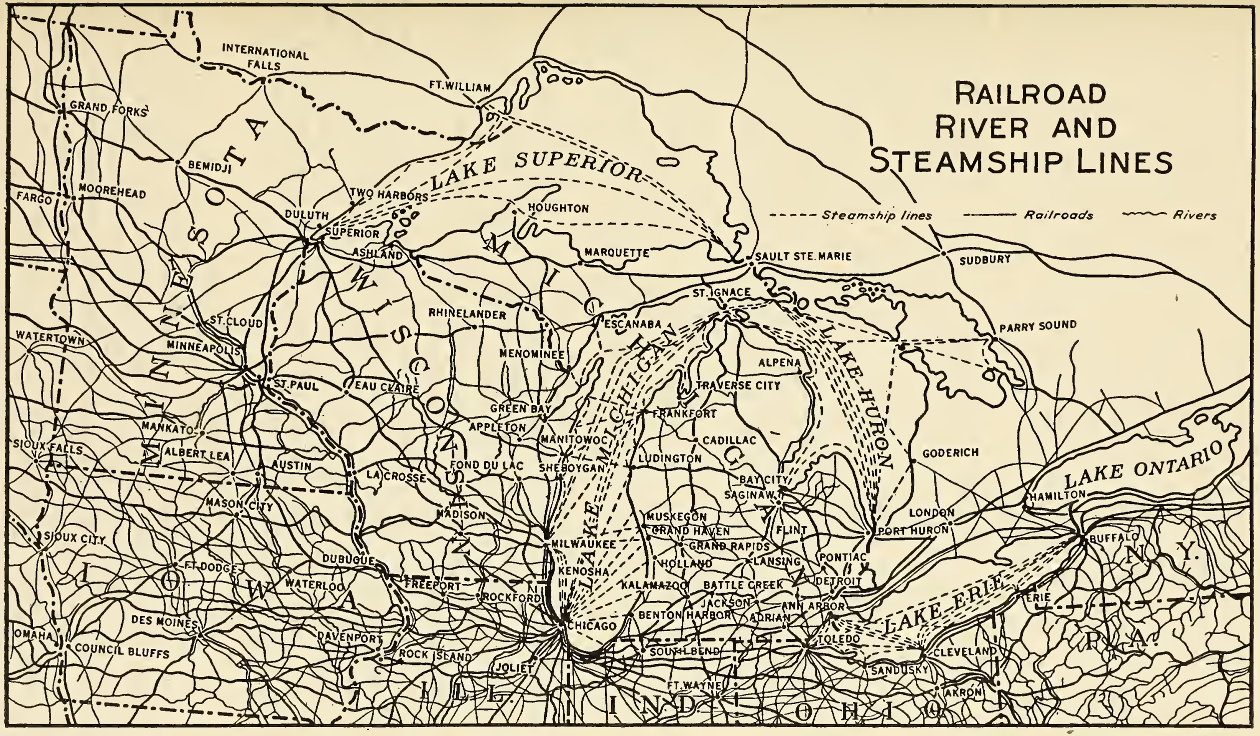

FIGURE 38.—The main railroad, river, and steamship lines are indicated with heavier lines than are the branch and local lines. It is impracticable to show on the map all the small local lines. In most cases the rail lines were originally built to haul logs, and many trains still haul logs, passengers, and other freight at the same time

CONDITIONS WITH RESPECT TO ROADS

Good highways to markets are essential for those settlers who are dependent on wagons and motor trucks to get their supplies to market. Without good roads the settler is left more or less stranded, especially if dependable railway service is not available. The settler whose farm is located on a poor road away from the main line of traffic is not in position to attract the tourists who are becoming increasingly important as a market for crops grown by settlers. Furthermore, there is some prospect that the main roads will be kept open through the winter and little, if any prospect that the poor side roads will be kept open. In some sections of the region the snow interferes severely with motor-bus traffic four months or more, on an average, each year.

Many settlers in northern Minnesota, Wisconsin, and Michigan are located on excellent roads. In some sections funds have been used freely to build roads. There is a disposition to tax mining companies and nonresidents somewhat heavily and to build roads with the proceeds of the tax. In some sections land companies have either built roads themselves or take an active part in obtaining roads built at public expense. In general, however, the settlers pay the bill. Consequently, the mere promise of a road by a land-company official should not lead the prospective settler to any false notions as to who will pay for it.

There are many parts of all three States in which the roads are very poor. In some cases the main roads are good, but the crossroads on which many settlers live are almost impassable, especially when wet. In many sections the settlers are located on old logging trails. Such conditions are likely to result when a land company takes over a tract of land to sell but provides no roads; or when small groups of settlers go off by themselves into the woods, as they did in the early pioneering days and still do occasionally.

Where the roads are poor, the mail service is poor. Many settlers have to travel long distances to the main roads, others have to travel several miles to town, and still others have mail delivery only two or three times a week. This inconvenience is practically all due to scattered settlement along poor roads. The Government seems to have established new mail routes freely wherever roads permit. Consequently, it is important to learn before purchasing a farm whether the roads are passable at all times of the year and how near and often mail will be delivered to the tract one may wish to purchase.

EDUCATIONAL FACILITIES

The cut-over region is, on the whole, fairly well supplied with district schools. Usually there are enough interested settlers in each community to push the matter vigorously. The schoolhouse is generally built within a year or two after any considerable number of settlers move into the locality. If most of the land in a particular settlement area is owned by a few companies, such companies are likely to take an active interest in the matter and arrange for school facilities on the most economical basis possible, which, in many cases, may mean transporting children to a distant school instead of building a local schoolhouse.

Such companies are usually able to persuade the local governments to help them out soon enough for their needs. Occasionally, however, local authorities are disposed to wait until they can see whether the land settlement or colonization company really brings in many settlers. Local authorities can not be criticized for that attitude. In fact, much good will ultimately result to settlers, if local officials refuse to construct schools in any section in which the soil is poor or in which settlement is scattered regardless of whether the soil is good or poor. In this way, local officials may encourage prospective settlers to locate where the chances for success are best—on good soil adjoining developed communities and established markets, schools, and roads.

A few of the evil results of the lack of some program to prevent unwise settlement have been made evident in studies recently completed in northern Wisconsin (*3*, *4*, *5*). Thus, one civil town in Lincoln County, Wis., one survey township in size, was settled by a large colonization company during, and a few years after the close of, the World War. In 1926, 68 per cent of the farms were abandoned, and more than half of the total area (59 per cent) was nontax-paying land. The school-district tax levy, however, was just about as large in 1927 as before the farms were abandoned[4] and before the other land was dropped for taxes. School expenses do not decline much as enrollment decreases. Prospective settlers may well hesitate to buy a farm in an area with low enrollment until they are convinced that as good or better purchases within or adjacent to settled localities are not available. The distance to the schoolhouse and the qualifications of teachers employed are also important considerations.

AVAILABILITY OF LOCAL MARKETS

In undeveloped regions settlers are in general handicapped both in buying and selling through local markets. In the first place, margins must be high because the volume of business is small. Second, local stores are handicapped by the fact that settlers are frequently in financial straits. This means that if the storekeeper is to serve such a community well, he must sell to many who may not be able to pay in full for a long time, or who may leave the country and never pay. The cost of carrying such risks must be borne by all. Moreover, the lack of local competition at some points may encourage a mild form of profiteering.

In the summers of 1919 and 1920, 65 stores in northern Minnesota and Wisconsin were visited, and retail prices on a list of 20 to 30 more or less standard articles were obtained. The results showed that in the larger towns, such as Aitkin, Detroit, Grand Rapids, and Bemidji, in Minnesota, and Rhinelander, Tomahawk, and Ladysmith, in Wisconsin—all centers of settlement development—the level of retail prices is about the same as in cities of similar size farther south. This does not mean that retail prices were the same in all of the towns; nor are they the same in all cities of the same size in the southern counties of these States. The range, however, was about the same as, or perhaps a trifle higher than, in the older cities of the same size. It happens that nearly all of the points mentioned have other industries, such as sawmills, mines, resort, and tourist trade, which largely maintain the stores, and the settlers benefit from this in better and cheaper store service.

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[4] See p. 66 for discussion of farm abandonment and farm turnover in general since 1920 in 33 communities of the cut-over region of the Great Lakes States.

Back from the large towns, however, in points with 500 to 1,000 inhabitants, such as Deer River, Bagley, Barnum, and Pine River in Minnesota and Drummond, Wabena, and Mountain in Wisconsin, there is a noticeable rise in the general level of retail prices, ranging from 4 per cent on a group of staples to 12 per cent on a group of notions. Most of these villages have several stores; some of them two or three general stores.

Still further in the wilderness are villages like Big Fork, Little Fork, Ray, Ponsford, and McGrath in Minnesota, and Pembine, Jump River, Exeland, Draper, and Gleason in Wisconsin, usually with 100 to 200 inhabitants, and one to two stores, and depending almost entirely on settlers' trade. The margins on staples at such points averaged 6 per cent above those in the first group of towns. Feed for livestock is a commodity the price of which is much affected, probably because it has to be bought in small quantities and the freight is high.

Most new settlements produce a surplus of eggs, poultry, and butter; this surplus is usually marketed through the local stores. If a community does not produce a surplus of these commodities the price is likely to be rather high. For example, in two points in Minnesota, not 50 miles apart, the price of eggs per dozen differed by 12 cents because one was shipping eggs in from Duluth and the other was shipping eggs out to Minneapolis.

There were 46 local creameries in 10 counties in northern Minnesota in 1919. Of these, 31 received less than 50,000 pounds of butterfat, and all of the others received less than 100,000 pounds during the year. Operating expenses per pound of butter for such creameries are high because the volume of business is small; in several, the operating expenses absorb the entire overrun. Many settlements produce too little cream to support a creamery; they usually ship to centralizers, of which there are several within shipping distance.

If local surpluses of cattle exist, they are usually bought by itinerant stock buyers who come into the territory at infrequent intervals and buy on very safe margins. At some points, the settlers organize a crude shipping association and ship an occasional car of livestock to South St. Paul, Chicago, or some other market.

Good local markets are necessary for successful land development, and the settlers who locate in districts in which roads, bridges, markets, and schoolhouses are provided, have many advantages over those who go farther into the woods. To avoid as many mistakes as possible in selecting a farm unit the prospective settler should visit local market centers and obtain first-hand information relative to prices asked or paid. Comparing prices asked for feed, standard groceries, and clothing with prices asked for the same goods in his home community will give him valuable information. Inquiries can also be made at the local creamery or cream-buying stations as to monthly prices paid, and these prices can be compared with comparable figures back home or in other parts of the State. Prices paid for eggs, potatoes, veal calves, and other products the settler would expect to sell may profitably be investigated by prospective settlers.

TYPES OF LAND-SELLING AGENCIES OPERATING IN THE REGION

Black and Gray (*1*, *p. 15–16*) state:

> The various agencies engaged in promoting land settlement in the Lakes States may be classified as (1) agents, (2) dealers, and (3) owners. Agents carry on a business of listing real estate to sell on commissions; dealers buy land for resale; and owners are engaged principally in selling lands which they acquired originally for other purposes. Most of the owners are lumber companies holding title to large areas of cut-over land, which they are trying to sell for whatever it will bring in order to get rid of the burden of carrying charges. Dealers, on the other hand, are mainly concerned in the margin between buying price plus operating expense on the one hand and selling price on the other.
>
> Those owners who are still actively engaged in lumbering operations are only casually interested in selling their cut-over lands and therefore are not pursuing an aggressive selling policy. They acquired their lands mainly for lumbering, from which in many instances they have received earnings amounting to many times the original cost of acquiring the land. Consequently they are not under the same pressure to dispose of their land as are the dealers who have recently purchased at high prices, in some cases on credit. The rising burden of taxes, however, is forcing more and more owners to undertake active selling, and some of them are using colonization methods as a means of speeding up the process. * * *
>
> Some of these agencies are public spirited, or else feel that good business requires them to consider carefully the welfare of their settlers; but they are more likely to be animated by profit-seeking motives than by consideration of the public interest. In the days of free land and homesteading, a settler's success depended upon his own courage, resourcefulness, and good judgment; under present conditions, it depends rather upon the policies and practices of the land companies and other real-estate agencies.

Most agencies are in the business of selling the land they own or have in stock regardless of location and physical characteristics. The sale of land with poor agricultural possibilities to men with little or no previous farming experience, and the policy of locating these settlers in widely scattered localities, are two of the primary causes of farm abandonment and retarded progress of settlers. The policy of scattering settlement followed by many land-selling agencies may well be to the interest of the agency, but it is in conflict with the best interests of the settler and the community. When land is held in large blocks, the usual reason for scattering settlement is to enhance the value of adjoining lands at the expense of the first settlers and the community as a whole.

The glowing accounts of successful settlers found in the advertising material of many land-selling agencies are misleading. If the average settler were as successful as statements in such material predict for all, there would be no settlement problems.

Nearly a fourth of the settlers included in a survey of settler progress made in the three Lakes States in 1919 and 1920 who had purchased land from colonization companies in Wisconsin and Minnesota accused the companies or their agents of some form of misrepresentation, principally as to the amount of stones, swamp, or rough land on their holdings, as to the possibilities of growing corn, clearing land, amount of outside labor available, or as to the ease of earning a living from the farm, from the start. Consequently, settlers should avoid giving too much credence to the advertising material sent out by many land-selling agencies. It may not contain statements that are positive falsehoods, but it is likely to be highly colored and to fail to include the less promising aspects of developing a cut-over farm, thus having the effect of misleading prospective settlers.

Although the best of the land companies realize that their business is hurt more than helped when settlers buy land and then give it up after trying to develop a farm, nevertheless their business is to sell land, and if they ruled out all sales in which there was reasonable doubt of success, they would not sell enough land, in many cases, to warrant maintaining a selling organization. Their general attitude is in favor of giving a large number a chance to succeed, in the expectation that out of this number enough will survive to get the land occupied by farmers. In most settlement areas there are enough instances of settlers who have succeeded in spite of poor land, hard clearing, lack of resources, lack of farm experience, or family handicaps so that the companies have no difficulty in convincing themselves that "after all, it is the man that counts," hence that it is not only good business but simple justice on their part to give almost anybody a chance.

On the other extreme are a considerable number of agencies selling cut-over land whose sole interest is in the profits or commissions on the land sold, and who do not worry about the effect of present tactics on future sales. Such agencies may resort to almost any kind of misrepresentation in their advertising material. It is difficult for the prospective purchaser to know at a distance what sort of land company is responsible for the advertisements sent him. Hence, the only safe plan is for him to disregard practically all of it.

Unfortunately it is also the policy of some local chambers of commerce and local booster organizations to issue highly colored advertising pamphlets designed to bring as many new settlers as possible into their localities regardless of the prospects of success. If these organizations analyze the problem at all, it is to conclude that the surest plan is to have a number of settlers come and try, hoping that at least a few will succeed. The prospective settler should accept with caution statements included in advertising material issued by agencies of this character.

NECESSITY OF CAREFUL INVESTIGATION FOR WISE SELECTION OF A CUT-OVER FARM

No one factor has more influence on success and failure than the judgment used by the settler in selecting his cut-over farm unit. The price paid for the land is not nearly so important as is the selection of a farm unit on good heavy soil, with little waste land and not more than an average number of stones, and located in proximity to a developed community where markets are established and roads and schools are provided for. To avoid as many mistakes as possible, the prospective settler can well afford to spend weeks if necessary, instead of a few hours or days, in selecting the farm on which he will stake his future.

Having decided upon the locality that is most nearly what he wants, the prospective settler is ready to examine the land. The examination should never be made in the winter when the land is frozen or covered with snow; it is best to make the examination in late summer when crops are rather well along. It is usually best to call upon the county agent or other established residents in the locality. The county agent and local bankers can help much by giving the names of a number of local farmers who can be interviewed. They also know where the good and the poor land is located. It is rarely safe to do business with land companies that take settlers in charge the moment they arrive, or even before they arrive, and carefully watch them to see that nothing adverse is brought to their attention.

After the prospective settler has spent a day or two interviewing local residents including both successful and unsuccessful farmers, has learned the reasons for their success or failure, has obtained their ideas as to quality of the land, and has learned about the reputation for honest dealing of the several land-selling agencies in the locality, he is then in better position to get in touch with one or more of the land-selling agencies, provided he decides to buy land. He should insist that he be shown not only the pieces of land the company has for sale, but enough of the neighboring land so he can judge as to the quality of the whole and the relative quality of the pieces that are for sale. This may require calling upon several land companies.

If the prospective settler concludes, after this examination, that he is still interested in the locality, and in becoming a "cut-over farmer," he is ready for an intensive examination of the particular pieces of land that he likes best. He should be sure to locate the exact boundaries of each tract considered, and above all, he should take plenty of time to reach a decision; he should not allow himself to be hurried or overpersuaded to make a purchase that he will later regret.

Many prospective settlers obtain land through the help of friends or relatives in the region. This plan has many advantages, but some real dangers are connected with it. Settlers already located are likely to picture the advantages in exaggerated terms to their friends and relatives. This tendency is partly due to their wish to have their friends near and to have the locality settled quickly, and partly to the fact that they know no better, having seen little of other parts of the country and the comparative opportunities.

It is only on some such basis as this that the steady flow of Polish and other nationalities into some of the poorest parts of the cut-over region can be explained. Often the back flow from such poor sections is as large as or larger than the inflow. There is also evidence that at times there is a considerable volume of selling of wild land by one foreign-born person to another who is working in a city, without any examination of the land.

CREDIT CONDITIONS

Credit is one of the most important of the settler's needs, but it is difficult to obtain on reasonable terms. Relatively few purchasers of cut-over land have sufficient resources to carry them to the point where they can make enough from their farms to take care of all their needs. Therefore, most settlers must sell their labor or be dependent upon money-loaning agencies in the area. Neither of these alternatives will prove as productive to the settler as would long term credit at low interest rates. If the settler sells his labor, he delays development of his farm, and if he depends on money-loaning agencies, he will have to pay high interest charges under most difficult terms when he can least afford them.

Many applications for loans are refused by the Federal land bank on the grounds that the farm is not able to support the family without considerable income from sources other than the farm. On February 7, 1918, the Federal Farm Loan Board made the following definite ruling on this point:

> As a basis of determining what area constitutes a farm for loaning purposes, the Board requires the following test: First, generally: The farm must be of sufficient area to yield in the hands of an ordinary capable farmer, putting it to the use to which it is generally adapted, and using average methods, an income sufficient to maintain the family of the applicant and discharge the interest and amortization payments.
>
> Second, especially: Where through intensive farming or the practice of a specialty a sufficient income has been regularly derived from a tract deficient in area for ordinary farming, or where the application of the prospective borrower shows that he is by experience capable of producing such an income from such a tract, such area may be accepted as sufficient, providing the land has a stable and permanent market value sufficient to warrant the loan applied for.
>
> Our bank cannot make loans in communities that have not yet passed the experimental stage of development; nor to individuals in any community whose farms are still in the primitive stage of pioneering. We must require a certain state of development of the entire community before farm loan associations can be chartered there, just as we demand certain conditions before a loan is made to the individual. It is not a good policy to make loans in "cut-over" sections that do not have good roads, schools, market facilities, etc.
>
> Under our system we are authorized to lend up to 50 per cent of the appraised value of the land and 20 per cent of the insurable value of the improvements. This pre-supposes that the farm is developed so as to be a producing unit, supporting the farmer and his family in carrying on his farming and developing operations. In order to constitute such a producing unit, it is necessary that the farm be developed to a certain point.
>
> Minimum requirements are essential and form in this connection a safeguard that must be set up. In order that a farmer can maintain himself, provide for his family, his overhead cost of operation, pay his interest and taxes upon a 40, 60, or 80 acre farm, it is absolutely necessary that he should have at least 15 to 20 acres of land cleared and under cultivation for field crops, 20 acres or more cleared among the stumps either sowed to grass such as timothy or clover, or cultivated to field and seed crops, and the balance of his land fenced in for pasture purposes. He should also have at least three good dairy cows and some poultry.

In recent interviews officials of a Federal land bank have stated that these requirements for a loan are held to be minimum requisites, particularly when the farm is not adjoining a developed community with established markets.

In the period before the farm has been sufficiently developed to become self-supporting, which has been aptly called the "grubstake" period, the settler is dependent upon credit either from the land-selling agency or from other agencies financially interested in his welfare because of their investment in land or in miscellaneous community enterprises. Few commercial banks or mortgage companies will supply him credit during this period. In fact, many agencies which formerly made a practice of loaning money on cut-over farms are no longer doing business in the locality, or are no longer open to the settler until his farm is developed to the stage at which it will support the settler's family.

In 1925 a study of the progress of 386 settlers on cut-over land in northern Wisconsin was made to ascertain the length of time required for the average settler to pass through the grubstake period.[5] No settler was considered to have passed through this stage until he had an income-producing unit of at least 15 cultivated acres and indebtedness not in excess of the sum of one-half the value of the land and one-fifth the value of the buildings. Loans to settlers who have less than these minimum requirements are not usually considered safe investments except by land companies in a position to repossess and resell the land.

The surveys indicate that small tracts of 40 acres or less are developed beyond the grubstake stage in a considerably shorter period than is required for larger holdings. Thus, every settler who had purchased only 40 acres of cut-over land had passed through the grubstake period within 5 to 11 years. Of those settlers who had purchased farms larger than 120 acres, not one had passed through the grubstake period in less than 12 years, and only half of those included in the survey who had owned farms larger than 120 acres for more than 12 years had passed beyond that stage. All settlers who had been less than 11 years on farms containing from 41 to 120 acres were still in the grubstake stage. Obviously, when a settler buys a large holding he is at extra expense for interest and taxes on a large acreage of land that yields no income; naturally this prolongs the period required to make the income from the holding balance the expenses. It is true that the settler is likely to require ultimately a holding larger than 40 acres in order to have a family-sized farm, but it is probably wiser, in many instances, to obtain a 5 to 10 year option on adjacent land that can be bought as needed, rather than to buy the extra land at time of settlement.

TENDENCY TO UNDERESTIMATE INITIAL CAPITAL REQUIREMENTS

Initial capital requirements to develop a cut-over farm are often overlooked by the inexperienced settler or are purposely discounted by the land agent who wants to make a sale. When buying, the purchaser should know that experience has proved that without a reasonable amount of initial capital his chances of success in developing a cut-over farm are greatly restricted. Other things being equal, the men with insufficient initial capital who succeed are exceptional and not average settlers. One of the main causes of failure is lack of capital to develop a farm to an income-producing basis. Capital is needed for the initial and subsequent payments on the land; for the payment of interest on debt, of taxes, and insurance; and, in the period just following, for buying lumber and building material, dynamite and other land-clearing equipment, livestock, feed and seeds, groceries, clothes and other living necessities, and miscellaneous supplies.

Obviously no general statement as to resources needed can be made. Assuming a settler buys an undeveloped tract of cut-over land, he will need at least $600 at present prices to care for his family the first year. During this first year he will also need money to get a house and a few sheds constructed, to fence a cow pasture, to clear and break the land for a small garden and get the garden started, to buy a few tools, a cow, a few chickens, and possibly a horse, and part of the feed for the livestock. If he does not buy a horse, he will need money to hire lumber hauled and to get plowing done. The least that will be necessary for these expenditures, including family living the first year, will be about $1,700.

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[5] HARTMAN, W. A. GRUBSTAKE STAGE IN LAND SETTLEMENT. 1928. (Unpublished Doctorate Diss., Univ. Wisconsin.)

Assuming this settler could earn $300 at outside labor or by cutting timber, which is a liberal estimate, there would remain the need for $1,400 cash the first year. If we assume that the settler can obtain all the outside work or timber work on his holding that he needs from this point on, then the additional cash required for the next few years would be about $500 as a margin of safety. This would be a total of about $2,000 in addition to down payment, payments on debt, interest, taxes, and insurance. These are minimum figures in every case and represent a very low scale of living and comfort.

A settler who wishes to develop within a period of 5 to 10 years a large enough holding to assure him an income of the sort prevailing in the developed parts of the three States would need at least $8,000. Some of this no doubt could be safely borrowed, and some of it might take the form of livestock and machinery brought with him. If, however, the settler buys a farm unit with some buildings and clearing, larger initial payments are usually required, so that the total resources required are about the same.

IMPORTANT SOURCES OF CREDIT[6]

In many respects loans for living expenses are most important. If the settler's original supply of cash on hand is exhausted and he can get no work immediately, his family is actually threatened with starvation if he can get no credit at the stores or at the local bank. It frequently happens that no work can be found. Under such circumstances the local stores can hardly be blamed for not loaning freely, for the settler may become discouraged and leave the country. The local bank must be even more cautious. On the other hand, it will not do for either of them to be too cautious, for if they are, they will have very little business. They would lose the good will of most of their prospective customers, and they would fall into great disrepute. Consequently, they follow a fairly liberal policy, on the whole, taking chances on the majority of the settlers but ruling out a number of the more doubtful ones. The losses sustained are of course added to the cost of the service.

This is one of the reasons that interest rates on short-time loans range generally from 8 to 12 per cent in the cut-over country and why retail prices are 5 to 10 per cent higher than in the larger cities in the region. Even on this basis, loans of this kind are only temporary, and unless the settler finds work soon, he will be cut off altogether. Under such circumstances many settlers go to the cities or mines or harvest fields and accumulate a grubstake. If they go to the cities they may take their families with them.

A summary of 617 real-estate loans in Minnesota and Michigan classified according to source is shown in Table 3. The local banks make loans rather freely for the purpose of buying cows, for they feel that cows are more or less self-liquidating. But they scrutinize more carefully loans to buy horses. Such loans are usually obtained upon chattel mortgage at rather high interest rates. Many settlers get tired of trying to get along without a horse, or with one horse, and go to the bank for a loan, when as a matter of fact they do not have work enough for a horse to warrant the loan or enough cleared land to provide feed for the horse.

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[6] The subject of credit for settlers is discussed more fully by Black and Gray (*1*) and by Ely, Hibbard, and Cox (*2*).

TABLE 3.—*Source of 617 real-estate loans in Minnesota and Michigan and average rate of interest, as reported by settlers in 1920*

Source of loan	Loans	Average rate of interest
	Number	*Per cent*
Local banks	313	8. 2
Federal farm loan bank	102	5. 6
Relatives	53	4. 7
Private individuals	93	6. 7
Land companies	49	6. 0
Trust companies	3	6. 2
Loan associations	4	6. 6
All sources	617	7. 0

The local banks are, on the whole, disposed to loan to settlers for the purpose of buying dynamite, fencing material, and a certain quantity of building material, especially if the settler is furnishing all the labor necessary to make use of them. This means that the resulting improvements are worth a great deal more than the supplies used in making them, and although not self-liquidating, may within a year or two add enough to the settler's income to pay for the supplies used. Rather generally, and probably with good reason, the banks object to loans for the purpose of hiring labor to clear land.

After the initial purchase, the principal need for land credit is to convert the land contract into a mortgage at the end of the contract period or to renew mortgages at the end of the first mortgage period. Local banks make many such loans, but the interest rates are rather high, averaging 8.2 per cent. In other cases, the original seller of the land takes the mortgage, usually at the same rate of interest as maintained on the contract or the original mortgage.

Some settlers also borrow to buy more land; the principal sources of such loans are the local banks and private individuals. A few loans for this purpose are obtained from the Federal farm loan bank.

On the local bank loans secured by notes alone the interest rate averages 8.7 per cent; on those secured by chattel mortgages, 9.3 per cent; and on those secured by real-estate mortgages, 8.2 per cent. Frequently relatives and other private individuals from whom the settler obtains loans live outside the cut-over country. For this and other reasons the interest rates on loans from this source are low. The land company loans are nearly all for the purpose of renewing mortgages or converting land contracts into mortgages.

The 102 loans obtained from the Federal farm loan bank were obtained primarily for the following purposes: To pay off land debt, 50; buy more land, 5; erect buildings, 15; clear land, 4; buy livestock, 9; pay off other debts, 10. In many cases the loan was for two or three purposes. When a settler has his farm developed to a point where it can be used as security for a Federal land loan, he can frequently use this development as a basis for a loan to finance further expansion, erect needed buildings, buy additional livestock, or clear additional land; or he may obtain a loan and pay off several notes he has been carrying at the local bank at high rates of interest.

Table 4 classifies 672 loans according to security. The highest rate is upon chattel mortgages. The average rate on chattel mortgage loans by banks was 9.3 per cent; on chattel-mortgage loans by private individuals and land companies, 8 per cent. The banks made over two-thirds of such loans.

TABLE 4.—*Security for 672 real-estate loans in Minnesota and Michigan and average rate of interest as reported by settlers in 1920*

Security for loan	Loans	Average rate of interest
	Number	*Per cent*
Mortgages	284	6.5
Chattel mortgages	57	8.8
Notes	331	7.5
Total or average	672	7.2

By States, interest rates were highest in Minnesota, the average being 7.4 per cent on real-estate mortgages, 9.3 on chattel mortgages, and 8.6 per cent on short-time loans secured by notes. Secured loans from banks in northern Minnesota averaged 8.9 per cent, the range by sections being from 8.2 per cent to 9.7 per cent. Rates in northern Michigan averaged about 1 per cent lower than in northern Minnesota; and those in southern Michigan 1.3 per cent lower than in northern Minnesota. The average on all short-time loans in northern Wisconsin was 7.7 per cent, and on all real-estate mortgages 6.7 per cent.

In the matter of short-time loans, settlers should borrow as little as possible and only for purposes that will return the principal of the loan very shortly. If seed is needed and no money is available, a good reason exists for a short-time loan. At the same time this is a poor type of loan for a bank because the return is uncertain. Loans for essential farm buildings are justified after a holding is fairly well developed. Loans to buy dynamite are also to be approved, as are other loans for materials with which a great deal of labor is to be combined. Unless the improvements resulting from the use of loans are quite certain to bring returns shortly, settlers can not afford to pay the high interest rates usually charged for such credit.

SERVICES OF LAND-SELLING AGENCIES IN SUPPLYING CREDIT NEEDS OF SETTLERS

A land company that brings in settlers has few greater responsibilities than that of looking after the settlers' credit needs. This is especially true if the company brings in settlers who have limited resources, as many of them do. One method of providing such credit is to erect buildings in advance of settlement and include their cost with selling price of land, thus making it a part of the land contract. Most of the companies that use this method also buy cows and other livestock in limited numbers for the settlers, taking chattel mortgages for security. Other companies make similar advances for building materials, dynamite, and equipment, adding the cost to the amount of the land contract. Several companies furnish horse and machine labor for clearing and brushing land and putting in crops, adding these advances to the amount of the contract.

Many of the companies make a few loans direct to settlers for small amounts to relieve needs of an immediate nature. In general, the companies prefer to let the local banks handle all short-time loans, if necessary signing the note with the settler. A number of the companies have had to help to establish banks by providing part of the capital and selecting the management. Several companies have also helped establish loan associations to aid the settlers in buying cattle and other kinds of stock.

Land companies must obtain returns from credit advances and the attendant risks by charging the usual rates of interest, by increasing the price of land or other property sold, and through the increment on the value of undeveloped lands adjoining developed and partly developed property.

RELATION OF CREDIT AIDS FROM COLONIZATION COMPANIES TO SUCCESS OF SETTLERS

The many aids or helps often promised to the settler in the advertisements of land-selling agencies may actually retard rather than promote the progress of the settler. Bulletin 1295 (*1*) shows clearly that the settlers who received no aid from colonization companies made more progress than those who did receive it. But it is also shown that the settlers in the colonization projects have less farm experience and fewer resources. An analysis of 2,243 records obtained in 1919 and 1920 from settlers in 47 settlement areas scattered through the northern half of the three Lakes States, and a study of the grubstake stages in land settlement made in Wisconsin in 1925 (fig. 39) led to the same conclusion. In the 1919 and 1920 projects the colonization settlements were put into two groups,

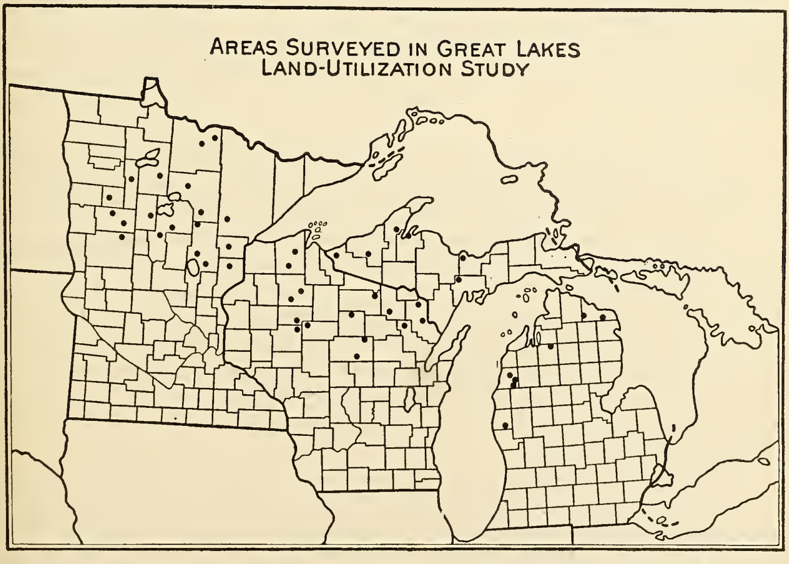

FIGURE 39.—Location of the 47 settlement areas covered in the study. They are about equally divided between States, and the Michigan settlers are about equally divided between the upper and lower peninsulas

intensive and extensive, the former representing a high degree of supervision and amount of aid advanced to settlers and the latter the reverse of these. The remaining settlement areas were also divided into two groups, those areas in which one or two land companies sold most of the land, and those in which the purchases were made from several land companies, former settlers, and other private owners. This division was made because there is generally some slight measure of supervision when one land company sells most of the land in a locality. The four groups may therefore be looked upon as representing four degrees of supervision and aid ranging from intensive in the first group to little or none in the last group. The results of this analysis are presented in Table 5.

TABLE 5.—*Progress record of settlers who purchased farms from colonization companies compared with records of settlers who bought farms from other selling agencies*

Item	Unit	Colonization companies		Other agencies	
		Intensive	Extensive	Ordinary land companies	Dealers and others
Settlement areas	Number [1]	6	4	16	15
Beginning net worth	Index number	66.0	73.8	101.1	127.0
Beginning farm capital	do	80.9	79.7	104.5	114.1
Cash on hand after purchase	do	95.9	81.2	102.5	120.8
Acreage in purchase	Acre	65.8	61.0	81.6	85.9
Land in timber	Per cent	4.8	15.4	20.5	11.3
Acreage cleared at purchase	Acre	.3	1.9	4.1	5.0
Price paid per acre	Index number	101.3	115.7	96.5	97.6
Foreign-born	Per cent	51.1	74.0	59.4	53.3
Settlers coming from farms	do	20.4	16.0	41.0	48.9
Paid on options and contracts	do	17.0	21.9	22.2	26.3
Paid on all conveyances	do	23.3	30.2	41.3	53.0
Proportion of beginning net worth paid on land	do	35.4	30.4	42.4	46.0
Net gain per year	Index number	87.2	95.9	105.7	106.1
Land clearing per year	do	106.6	74.0	107.6	108.0

[1] Base is average for all settlers.

It is plain, from the figures on beginning net worth and farm capital, that for the most part the colonization companies are attracting a special type of settler with extremely small resources. These settlers are reached by advertising and sales campaigns conducted mostly in large cities, but to some extent in small cities and villages nearer to the farms. As a general rule, more of the settlers dealing with colonization companies buy their farms on land contracts, and they have less cash after purchase than do settlers who buy farms from other sources. With the help received from the colonization companies, these settlers nevertheless make considerable progress, but not as much as the settlers who buy farms from land companies and dealers.

It should be clearly understood that there are good and bad colonization projects. If the four best of the six intensive colonization projects were considered by themselves, their indexes of net gain (Table 5) would average 100, or 13 more than the 87 obtained, and their indexes of land clearing would average 116, or 10 more than the 106 obtained. Data as given in the form of indexes or percentages of the average of all in the particular group to which the data refer are used partly to facilitate comparisons and partly to conceal the actual figures which were, in some cases, obtained upon the condition of confidential use. The index of land clearing for the four colonization projects that use so-called extensive methods would be larger were it not for one settlement area that was begun as an intensive project but presently became extensive, forcing the settlers to rely mainly on earnings from a paper mill for their livelihood.

ADAPTABILITY OF LAND CONTRACTS TO LAND-SETTLEMENT CONDITIONS

Relatively few land-settlement and colonization companies use land-sales contracts that give adequate protection to the settler or are suited to land-settlement conditions. Optional credit terms of 15 or more years from land-selling agencies would eliminate much high-priced credit which the usual settler is obligated to take. No settler should agree to make payments on principal or to pay interest on land debt the first three or four years. To meet such payments would retard his progress at the time when the need for such progress is most urgent.

Given a piece of wild land with no timber of much value on it, a settler who wishes to buy land on contract should be asked to make an initial payment of only $100 to $200 and to make no further payments on land debt provided he builds a habitable house, clears an acre or two of land each year, pays the taxes on the property, and carries insurance. More than this, the land contract should contain some provision by which the settler is repaid the value of buildings and land improvements in case the contract is closed out for any reason. Such valuations should be on the basis of what the improvements will sell for and not what they cost the settler. If, however, the land has merchantable timber that would sell for more than the cost of cutting and getting it to market (including in cost the amount the settler could earn at other work available in the locality) the settler can properly be asked to make a correspondingly larger down payment.

The sellers of land on contracts with such provisions have ample protection in increased value of improvements. They will get their pay when the holdings are improved sufficiently to be used as security for a mortgage covering the remaining indebtedness.

If a settler can not obtain a contract under conditions like these, he should not buy on contract or he should have excellent evidence that the land company never enforces payments so long as the settler continues to improve some of the land. Even then, the settler will have no way of recovering the value of his improvements except to find a buyer for his holding, which is often not possible at once. The other alternative is for the settler not to buy until he has enough cash to purchase full title on the security of a mortgage and have enough cash left to take care of his family while clearing land.

The immediate objective of any settler who has bought under a contract should not be to pay off the debt against his holding, but to increase the value of his holding to the point at which he can obtain a mortgage, for the amount of his debt, from the Federal farm loan system or some other agency that will give him 30 or more years to pay off the principal at low interest rates.

PROGRESS SETTLERS MAY EXPECT TO MAKE

The remark is constantly made by men closely associated with land-settlement activities that "when it comes to making a success on a cut-over farm nothing much counts but the settler himself." As evidence, successful settlers are pointed out as illustrations of how almost every conceivable handicap has been overcome. Such a statement contains a large element of truth, but it is far from the whole truth. Although personal qualifications of the settler and his family may represent a most important factor in success, progress made by settlers is also associated with beginning net worth, size of purchase, type of land purchased, location of land, price paid, terms of purchase, previous occupation and farm experience, aid and supervision received from the land-selling agency, development methods followed, organization of the farm business, farm practices employed, market conditions, and many other factors. Clearly then, no one factor is entirely responsible for the progress a particular settler may make.

Any settler may believe that he will do better than the average, but undue optimism at the beginning may lead to discouragement and failure a few years later. The pamphlets and follow-up letters used by certain land-selling agencies contain many extravagant and misleading statements that do much harm to the settler and his family, for these statements lead them to believe that independence and financial success within two or three years await every man who buys a cut-over farm. Exceptional successes are used as illustrations, and average successes and failures are seldom if ever mentioned in such material. It may be helpful to consider the rate of progress indicated by the experiences of 2,243 settlers located in 47 settlement areas (fig. 39) in the cut-over region of Minnesota, Wisconsin, and Michigan. This analysis is made, first, in terms of averages for the entire group of settlers and, second, in terms of groups of poor, good, and average settlers who had been on their farms a like number of years.

The 2,243 settlers included in this study are about equally divided between the three States, and the Michigan settlers are about equally divided between the Upper and Lower Peninsulas. (Table 6.)

TABLE 6.—*Number of farms studied, average development period, average size of farms and the year survey was made in each settlement area, by States*

WISCONSIN

Farms studied in each settlement area	Average development period	Average size of farm	Time of survey
Number	*Years*	*Acres*	*Year*
53	7.2	58	[1] 1920
18	9.4	67	[1] 1920
21	3.8	123	[1] 1920
31	2.7	83	[1] 1920
30	2.6	68	[1] 1920
50	2.1	67	[1] 1920
21	2.0	49	[1] 1920
51	2.0	61	[1] 1920
97	1.4	59	[1] 1920
58	0.6	72	[1] 1920
21	0.3	78	[1] 1920
30	4.0	79	[2] 1920
48	8.7	83	[2] 1920
23	5.9	84	[2] 1920
51	4.5	52	[2] 1920
603	3.5	69	----------

See footnotes on p. 53.

TABLE 6.—*Number of farms studied, average development period, average size of farms and the year survey was made in each settlement area, by States*—Continued

MINNESOTA

Farms studied in each settlement area	Average development period	Average size of farm	Time of survey
25	1.6	111	[1] 1920
11	3.9	124	[1] 1920
11	9.1	92	[1] 1920
12	1.0	140	[1] 1920
50	4.5	107	[3] 1919
47	4.6	93	[3] 1919
38	4.7	87	[3] 1919
32	4.2	93	[3] 1919
51	5.2	88	[3] 1919
29	4.7	97	[3] 1919
43	4.4	97	[3] 1919
67	4.6	89	[3] 1919
72	3.1	62	[3] 1919
43	5.1	102	[3] 1919
41	4.1	117	[3] 1919
28	3.9	73	[3] 1919
67	11.6	125	[4] 1919
69	10.6	162	[4] 1919
61	7.0	293	[4] 1919
797	5.8	117	----------

NORTHERN MICHIGAN

107	8.2	61	[5] 1920
30	3.4	51	[5] 1920
122	7.7	62	[5] 1920
56	5.1	98	[5] 1920
71	7.4	46	[5] 1920
51	7.5	72	[5] 1920
437	7.1	64	----------

SOUTHERN MICHIGAN

56	11.3	71	[5] 1920
68	14.8	123	[5] 1920
81	10.0	109	[5] 1920
34	14.9	84	[5] 1920
8	4.9	88	[5] 1920
32	8.1	76	[5] 1920
127	13.9	94	[5] 1920
406	12.4	96	----------

THREE STATES

2,243	6.6	92	----------

[1] This survey was made by the U. S. Department of Agriculture. The field work was under the direction of John D. Black. The assistants were Budd A. Holt and George C. Haas.

[2] This survey was made by the U. S. Department of Agriculture in cooperation with the University of Wisconsin. The field work was done by S. W. Shear and Donald Jackson, then of the University of Wisconsin.

[3] This survey was a joint undertaking of the U. S. Department of Agriculture, the University of Minnesota, and the Minnesota State Department of Agriculture. The field work was under the direction of John D. Black of the University of Minnesota. The assistants were C. R. Chambers of the University of Minnesota, E. A. Boeger of the U. S. Department of Agriculture, and Edwin C. Johnson of Minnesota State Department of Agriculture.

[4] This survey was a joint undertaking of the U. S. Department of Agriculture and the University of Minnesota. The field work was under the direction of Andrew Boss of the University of Minnesota. The assistants were Warren C. Waite and C. G. Worsham.

[5] This survey was made by the U. S. Department of Agriculture. The field work was under the direction of C. O. Sauer of the University of Michigan. The assistants were W. L. Witte, Archie Black, D. C. McLachlen, R. D. Jennings, J. C. Rundles, and Wade DeVries.

The settlements represented in the study were selected to show a variety of conditions and types of settlers. Nearly all nationalities of foreign born are represented, and all types of native born, from the Corn Belt farmer to the city born and city bred. All types and gradations of soil are represented from light sand to Superior red clay. Several of the Wisconsin settlement areas were on the silt loam soils common in central-northern Wisconsin. The different types of clearing, from heavy pine to scrub oak and jack pine and even semi-prairie, are represented. In some areas, the second growth was well developed; in others it was very young, or well burned over. A few areas are near cities of considerable size with good railroad facilities.

Some of the settlements are very new; others are from 25 to 50 years old.

The surveys were made at different times and with somewhat different objectives, so that the results obtained can not be combined for all purposes. Sixteen settlement areas were chosen with a view to studying the effects of the different methods employed by land companies. Several other settlement areas, however, also illustrate this phase of the problem. Thirteen settlement areas were studied more or less on a township basis, and all the settlers in the territory were included, whether they had been on their farms 6 months or 40 years. Some of the townships studied on this basis had a great deal of unoccupied land in them, especially in the sandy lands of southern Michigan. Two settlement areas were studied with a view to analyzing development methods in the more advanced stages of settlement.

The average development period or time since settlement of the 2,243 settlers was 6.6 years; but for 2 areas it was less than a year, and for 7 areas over 10 years. The average for the 15 Wisconsin areas was only 3.5 years; for the 19 Minnesota areas, 5.8 years; for the 6 northern Michigan areas, 7.1 years; and for the 7 southern Michigan areas, 12.4 years.

The settlers covered in these surveys can all be described as having been successful to the extent of being able to continue on their holdings up to the time the survey was made. Information relative to those settlers who had tried, failed, and moved away up to 1920 was not obtained. Consequently, the following discussion of progress which prospective settlers may expect to make is biased in so far as failures are not accounted for. That this bias could have been an important factor is suggested in the discussion of farm turnover between 1920 and 1928 in 33 of the 47 areas for which progress records are available. (Pages 66 to 78.)

AVERAGE NET GAIN OF SETTLERS

The average development period, or time since settlement, for 2,052 of the 2,243 settlers covered in the study was 6.3 years. (The data for three settlement areas were not taken in such a way as to provide a measure of progress.) They started out with an average net worth of $1,388, and their average net gain due to farm business was $2,545, or $402 per year. This $2,545 involved the following average changes in assets and liabilities.

Increase in value of—			
Land	$1,349		
Buildings	908		
Livestock	528		
Equipment	256		
Supplies on hand	56		
Total		$3,097	
Decrease in cash on hand	255		
Increase in debt	179		
Total		434	
Net gain			$2,663
Less excess of new capital invested over capital withdrawn			118
Net gain due to farm business			2,545

There are always many settlers who transfer capital from elsewhere after moving to their holdings, either as a result of selling other property owned by them or as a result of receiving income from other property; and there are other settlers who receive gifts or inheritances after settlement which they apply to their cut-over holdings. It is not proper that these amounts should be considered as a part of the gain in net worth due to farming operations. They are therefore listed under the heading "New capital invested."

On the other hand, a few of the settlers make expenditures which have little to do with their cut-over farming business, such as for taxes and upkeep of property owned elsewhere, helping parents or other members of the family, and outside investments. It is proper that the cut-over farming business should be credited with such contributions. In taking the survey records, unusual or obviously high sickness and hospital bills were also included in the "Capital withdrawn" group.

The increase of $1,349 in value of land is partly explained by the increase of improved land and partly by the increase in value of all land. The progress in land clearing during the development period was 15.1 cleared acres plus 5.9 brushed acres per settler. Assuming that land had to be brushed before being stumped and plowed, the average settler cleared 2.4 acres and brushed 3.3 acres per year. The average increase in the price per acre of wild land during the settlement period of all the settlers was $10.70. If an increase of only $10 per acre is applied to 73 acres, the average size of farm purchased, the increased value per holding due to rise in price of wild land is $730. This leaves $620 as the increase in value of land due to clearing and brushing.

The increase of $1,748 in value of buildings, livestock, equipment, and supplies on hand should be interpreted partly in terms of the rise in the general price level during this period. Farm-machinery prices, for example, nearly doubled during this period. Building-material prices and prices of farm products more than doubled. The general price level in 1920 was 52 per cent higher than the general price level prevailing at the time of the arrival of these settlers. Making adjustment for these differences reduces the increase of $1,748 to $1,080. Thus, a total of $1,700 in increased valuation of land and other farm property, is to be attributed to other than rising price levels. If from this $1,700 is subtracted $434 for increase in debt and decrease in cash on hand, and $118 for the excess of new capital invested over capital withdrawn, there is left $1,148, or $180 per year, for actual net gain due to cut-over farming. It should be recalled at this point that this record includes only settlers who had been able to remain on their farms. If the losses of those who had failed and moved were included, the average would be much lower.

A summary that combines the progress of all settlers regardless of whether they have been on their holdings 6 months or 20 years does not give a clear or accurate impression of the rate of progress settlers may expect to make. Separate figures are given in Table 7 for the settlers who had been upon their holdings different periods of time.

TABLE 7.—*Summary of average progress made per settler in developing a cut-over farm in the Great Lakes States by years since settlement for all settlers in each year group and for selected groups of good and poor settlers*

Item	Unit	Averages of groups by development periods—														
		1–2 years			2–3 years			3–4 years			4–5 years			5–6 years		
		26 poor settlers	23 good settlers	279 average settlers	24 poor settlers	19 good settlers	182 average settlers	15 poor settlers	16 good settlers	136 average settlers	15 poor settlers	14 good settlers	135 average settlers	14 poor settlers	13 good settlers	91 average settlers
STATUS AT TIME OF SETTLEMENT																
Beginning net worth	Dollar	1,379	1,580	1,760	921	1,444	1,433	871	1,418	1,562	773	1,824	1,475	764	2,563	2,063
Acres purchased	Acre	55	63	70	52	54	68	55	74	81	54	94	81	49	107	83
Equivalent cleared [1]	do	3.0	5.8	6.6	1.5	1.0	4.0	2.5	1.5	4.5	1.0	3.1	5.3	.6	6.1	10.0
Purchase price	Dollar	1,302	1,959	2,029	1,139	1,044	1,525	921	1,500	1,467	916	1,882	1,418	405	1,673	1,649
Price per acre	do	23.67	31.10	28.99	21.90	19.33	22.43	16.75	20.27	18.11	16.96	20.02	17.51	8.27	15.64	19.87
STATUS AT TIME OF SURVEY																
Development period	Years	1.18	1.10	1.20	2.17	2.22	2.18	3.15	3.20	3.17	4.18	4.11	4.24	5.20	5.13	5.13
Improved acres:																
Cleared	Acre	3.8	11.3	10.4	3.2	10.1	10.4	8.1	12.5	13.6	7.5	20.4	19.4	6.6	27.3	24.0
Brushed	do	3.9	6.3	5.6	4.2	7.0	5.6	2.7	15.6	6.8	4.4	14.2	7.3	6.1	14.5	9.6
In crops	do	6.0	9.4	9.2	5.5	10.2	11.1	7.5	16.9	15.1	8.3	25.9	21.2	9.4	32.7	21.2
Livestock on hand:																
Milk cows	Number	1.5	2.7	2.2	1.5	2.9	2.4	1.9	2.3	2.9	1.9	4.5	3.7	1.9	5.4	3.7
Other cattle	do	.4	1.6	1.2	.8	1.7	1.5	1.4	2.3	1.8	.6	2.8	2.3	1.4	3.4	2.5
Horses or mules	do	-------	1.6	1.3	.8	1.8	1.4	1.2	2.0	1.6	.9	1.9	1.7	1.3	2.6	1.9
Value of buildings	Dollar	632	1,123	843	450	694	864	435	939	881	603	1,404	1,031	610	1,760	1,277
Total farm capital	do	2,687	3,936	4,066	2,380	3,796	4,063	2,446	5,038	4,704	2,425	6,839	5,151	2,242	7,875	5,841
Total debt	do	1,082	1,486	1,413	964	736	1,122	723	1,062	996	642	1,268	908	385	1,384	821
Receipts per year:																
All sources	do	548	846	617	541	840	653	512	1,125	723	450	1,025	797	418	1,224	939
Crops	do	17	39	70	38	158	106	75	242	117	91	257	223	81	411	263
Livestock	do	32	143	101	52	221	163	102	406	201	105	320	263	114	517	391
Timber products	do	106	163	102	114	96	85	-------	193	96	71	122	55	2	181	89
Outside labor	do	393	501	344	337	365	299	335	284	309	183	326	256	221	115	196
Net worth	do	1,743	2,678	2,890	1,504	3,261	3,131	1,797	4,216	3,834	1,892	5,985	4,440	1,978	7,253	5,185

PROGRESS MADE

Increase in net worth:																
Total	Dollar	364	1,098	1,130	583	1,817	1,698	926	2,798	2,272	1,119	4,161	2,965	1,214	4,690	3,122
Per year	do	308	998	942	269	818	779	294	874	717	268	1,012	699	233	914	609
Per cent of average	Per cent	32.7	105.9	100.0	34.5	105.0	100.0	41.0	121.9	100.0	38.3	144.8	100.0	38.3	150.1	100.0
Increase in improved land:																
Total cleared	Acre	1.2	5.4	4.3	1.9	9.7	6.6	5.6	11.4	9.3	6.8	18.0	14.4	6.4	21.4	14.2
Cleared per year	do	1.0	4.9	3.6	.9	4.4	3.0	1.8	3.6	2.9	1.6	4.4	3.4	1.2	4.2	2.8
Total brushed	do	2.9	6.5	4.4	3.7	5.6	5.0	2.7	14.7	6.2	3.7	12.4	6.6	5.1	13.9	9.0
Brushed per year	do	2.5	5.9	3.7	1.7	2.5	2.3	.9	4.6	2.0	.9	3.0	1.6	1.0	2.7	1.8
Equivalent cleared per year [1]	do	2.0	7.3	5.1	1.6	5.4	3.9	2.2	5.4	3.7	2.0	5.6	4.0	1.6	5.3	3.5

STATUS AT TIME OF SETTLEMENT

Item	Unit	Averages of groups by development periods—														
		7–8 years			10–11 years			12–13 years			15–16 years			20–21 years		
		16 poor settlers	13 good settlers	101 average settlers	8 poor settlers	12 good settlers	49 average settlers	8 poor settlers	7 good settlers	46 average settlers	5 poor settlers	6 good settlers	22 average settlers	11 poor settlers	11 good settlers	35 average settlers
Beginning net worth	Dollar	553	1,439	1,014	938	1,406	1,173	1,133	1,814	917	919	1,461	1,154	503	1,078	629
Acres purchased	Acre	50	107	72	50	77	69	72	177	90	60	80	66	58	66	60
Equivalent cleared [1]	do	.7	1.5	2.5	1.4	7.0	10.7	6.0	2.8	7.5	2.0	25.0	7.2	3.6	--------	8.9
Purchase price	Dollars	722	1,503	1,071	522	908	754	862	1,709	745	662	1,062	559	393	515	393
Price per acre	do	14.44	14.05	14.88	10.44	11.79	10.93	11.97	9.66	8.28	11.03	13.28	8.47	6.78	7.80	6.55

STATUS AT TIME OF SURVEY

Development period	Year	7.15	7.05	7.17	10.12	10.13	10.14	12.19	12.18	12.15	15.00	15.11	15.14	20.56	20.27	20.18
Improved acres:																
Cleared	Acre	9.4	26.5	18.8	14.1	44.8	35.6	28.8	59.6	35.9	17.8	72.8	49.9	27.1	--------	43.3
Brushed	do	3.9	14.5	8.6	9.9	7.3	7.4	2.9	2.0	4.7	12.8	.3	8.8	1.8	10.2	7.7
In crops	do	9.6	27.5	19.0	17.4	28.1	29.3	14.8	14.0	22.7	16.5	37.3	31.9	15.4	38.0	26.3
Livestock on hand:																
Milk cows	Number	1.6	6.1	4.2	4.1	8.1	5.6	2.6	6.6	3.2	4.0	7.3	5.2	2.5	6.5	4.7
Other cattle	do	1.2	6.4	3.5	1.4	6.3	3.8	1.8	7.1	4.6	1.6	7.3	6.6	2.3	7.5	4.4
Horses or mules	do	1.1	2.7	1.7	2.1	2.3	2.0	1.8	2.7	2.2	1.8	3.0	2.1	1.7	2.3	2.1

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[1] A brushed acre is assumed to be equivalent to 40 per cent of a cleared acre.

TABLE 7.—*Summary of average progress made per settler in developing a cut-over farm in the Great Lakes States by years since settlement for all settlers in each year group and for selected groups of good and poor settlers*—Continued

STATUS AT TIME OF SURVEY—Continued

Item	Unit	Averages of groups by development periods—														
		7-8 years			10-11 years			12-13 years			15-16 years			20-21 years		
		16 poor settlers	13 good settlers	101 average settlers	8 poor settlers	12 good settlers	49 average settlers	8 poor settlers	7 good settlers	46 average settlers	5 poor settlers	6 good settlers	22 average settlers	11 poor settlers	11 good settlers	35 average settlers
Value of buildings	Dollar	528	1,885	1,246	907	2,900	1,829	1,150	2,214	1,655	880	2,767	1,659	832	2,773	1,571
Total farm capital	do	2,325	7,944	4,997	2,778	9,972	6,592	3,212	9,665	6,180	2,567	8,473	5,650	3,241	7,980	5,151
Total debt	do	585	1,128	824	582	1,171	961	325	1,321	1,022	460	367	574	562	239	340
Receipts for year:																
All sources	do	500	1,402	805	572	1,290	1,020	640	1,821	1,130	497	1,576	1,017	611	1,423	894
Crops	do	87	514	196	176	355	393	270	936	352	119	779	473	168	305	271
Livestock	do	112	549	363	193	716	447	157	626	467	178	609	417	331	676	392
Timber products	do	10	75	36	24	170	73	5	--------	15	30	--------	11	23	115	36
Outside labor	do	291	264	210	179	49	107	208	259	296	170	188	116	89	327	195
Net worth	do	1,918	6,968	4,034	2,315	9,349	5,801	3,061	8,930	5,714	2,453	8,652	5,402	2,979	8,419	5,227

PROGRESS MADE

Item	Unit	16 poor settlers	13 good settlers	101 average settlers	8 poor settlers	12 good settlers	49 average settlers	8 poor settlers	7 good settlers	46 average settlers	5 poor settlers	6 good settlers	22 average settlers	11 poor settlers	11 good settlers	35 average settlers
Increase in net worth:																
Total	Dollar	1,365	5,529	3,020	1,377	7,943	4,628	1,928	7,116	4,797	1,534	7,191	4,248	2,476	7,341	4,598
Per year	do	191	784	421	136	784	456	158	584	395	102	476	281	120	362	228
Per cent of average	Per cent	45.4	186.2	100.0	29.8	171.9	100.0	40.0	147.8	100.0	36.3	169.4	100.0	52.6	158.8	100.0
Increase in improved land:																
Total cleared	Acre	8.8	25.5	16.4	13.2	37.8	25.1	22.8	57.4	28.6	15.8	47.8	42.7	23.5	46.5	35.1
Cleared per year	do	1.2	3.6	2.3	1.3	3.7	2.5	1.9	4.7	2.4	1.1	3.2	2.8	1.1	2.3	1.7
Total brushed	do	3.7	13.3	8.4	8.6	7.4	6.9	2.9	.6	4.1	12.8	.3	8.8	1.7	10.2	5.9
Brushed per year	do	.5	1.9	1.2	.8	.7	.7	.2	[2] 0	.3	.9	[2] 0	.6	.1	.5	.3
Equivalent cleared per year [1]	do	1.4	4.4	2.8	1.6	4.0	2.8	2.0	4.7	2.5	1.5	3.2	3.0	1.1	2.5	1.8

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[1] A brushed acre is assumed to be equivalent to 40 per cent of a cleared acre.

[2] Less than 0.1 acre.

Objection is raised by many to presenting matters of this kind entirely in terms of averages. They say that the facts wanted are not those regarding the average settlers, but regarding the settlers who have really shown how to succeed. Accordingly, there has been included in Table 7 an average of a smaller group of the good settlers for each year of settlement period. Some settlers who did even better than those included in this group were excluded because of highly exceptional circumstances, such as large incomes and profits from outside enterprises, logging, and real-estate transactions. The good settlers made their progress doing the things that settlers normally do. In the interest of accuracy, it is also necessary to include an offsetting group of poor settlers. Here again all abnormal cases are excluded, such as settlers who were absent from their holdings for long periods, or who used their holdings, almost entirely as a place of residence, or who had been burned out by forest fires.

Most persons will agree without hesitancy that of the three sets of figures presented in Table 7, the average of all settlers comes nearest to indicating what the usual settler can reasonably expect to do. Upon the assumption that this is true, and further that the groups of settlers by year of settlement periods are fairly adequate samples, the progress of these settlers will be analyzed more in detail.

It would appear from Table 7 that the more recent settlers had higher beginning net worth than did the earlier settlers. This is partly due to changes in the price level. If beginning net worth is reduced to a common price level, as of the year 1913, the beginning net worth of those who settled in the period from 1912 to 1916 is the highest, averaging $1,530; that of the settlers taking up farms from 1906 to 1912 averages $1,030; that of settlers coming between 1901 and 1905 averages $840; that of those who settled before 1900 averages $740; and the average beginning net worth of those settling between 1917 and 1920, instead of being the highest, is reduced to $930. Therefore, until recently, the settlers have been bringing more resources with them as the years have gone by. One reason for this is that fewer of them were homesteaders. The rapid decline in beginning net worth for the three years before 1920 is partly explained by the fact that unpromising settlers were brought in through high-pressure sales methods practiced by colonization companies that were especially active during this period. The rapid rise in prices from 1916 which destroyed much of the purchasing power of settlers' savings of the years before 1916, is further explanation of this decrease.

The size of holdings purchased, although varying from group to group, has maintained about the same general level, declining a little of late because of the activities of the so-called colonizing companies in selling small tracts, and ranging a little lower before 1908 because of a preponderance of sales to foreign-born settlers in that period.

YEARS REQUIRED FOR AVERAGE CUT-OVER FARMS TO BECOME SELF-SUPPORTING

It is sometimes said that settlers can support themselves on cut-over land after three to four years. The group of 136 settlers who had been on their farms three to four years (Table 7) had bought farms with an average of 4.3 cleared acres and 0.6 brushed acre. At the time they were visited, three years later, they had added to these improved acres 9.3 acres of clearing, and 6.2 acres of additional brushing. They had 15.1 acres in crops, and were keeping 2.9 milk cows and 1.8 head of other cattle. Their annual receipts from crops and livestock were $318. They had been able to sell $96 worth of timber products, making a total of $414 earned from their holdings.

This sum is not enough to support a family, to say nothing about financing land clearing, building construction, livestock purchases, and making payments on interest and principal of indebtedness. Hence, these settlers had found it necessary to do work off their farms to the extent of earning $309. Some of this amount was earned at what may be called pioneer labor, that is, at road building, logging, and sawmill work in the cut-over region; but a considerable part of it was earned in mining or city occupations, or by work in the western harvest fields. In many cases these supplementary employments made it necessary for the settlers to go away from home, usually, but not always, leaving their families behind to take care of the farm. In such cases, board and lodging had to be paid, which often took a considerable part of the earnings. Under these circumstances only the actual savings brought back to the farm were counted as earnings. Of the remaining land debt, $849 represents 58 per cent of the original purchase price of the farm as compared with the land debt of 45.6 per cent of the original purchase price still owed by the settlers who had been on their farms less than two years. Hence, very few payments had been made on the principal. In fact, more settlers had increased their debts.

By the time the settlers had been on their holdings five to six years, they had been able to clear 14.2 acres of land and brush an additional 9 acres. They had an average of 21.2 acres for crops, including the land already cleared at time of settlement. They had erected buildings worth $1,277 on an average, and had an average of 3.7 milk cows and 2.5 other cattle. They had increased the average number of horses kept. The average gross receipts at the time of the survey were $939 per year, of which $196, or 21 per cent, was from labor off the farm, and $89, or 9 per cent, was from the sale of timber products. The land debt of this group of all settlers averaged only 40 per cent of the original purchase price, but this indebtedness is abnormally low. The average for all settlers who had been on their holdings from five to eight years was 49.5 per cent, as compared with 45.6 per cent for those who had been on their farms less than two years, and 58 per cent for the 3 to 4 year group. Hence, land indebtedness may have been reduced somewhat since the third year; but it still represented a larger percentage of the original purchase price than at the beginning.

If the settlers who had been on their farms five to six years could have managed on the $723 of income obtained by the 3 to 4 year group, they would have needed to do but little work off the farms. They were, therefore, almost able to support themselves from their farms provided they spent no money for land clearing or buildings and made no payments on principal indebtedness. Hence, they found it still advisable to sell their labor in outside employment rather than to spend all their spare time improving their farms.

YEARS REQUIRED TO MAKE A WELL-DEVELOPED FARM

The 12–13-year group of settlers had cleared 28.6 acres, brushed 4.1 additional acres, and had 22.7 acres in crops. Thus, some cleared land could be used for pasture. They had erected buildings worth $1,655 at the time of the survey. They had about 10 head of cattle, of which 6 were milk cows, and they averaged more than 1 team of horses per farm. Their receipts from crop and livestock enterprises averaged over $800, but timber-products sales had been reduced to a pittance. These settlers were able to support themselves on their holdings according to the standards of living to which they had become accustomed, but they still thought it advisable to work off the farm when they could. The earnings of this group, from outside labor, were abnormally high—a normal figure would have been less than $200, making a total income of about $1,000 per year. An interesting development in the matter of land indebtedness is that these settlers had land debt averaging $60 more than the original purchase price of their land. The improvements made on their farms had furnished the basis for further loans, and they had taken advantage of this condition to expand their operations still further.

DECREASE IN RATE OF PROGRESS AFTER A PERIOD

After settlers have been on their farms 12 or more years there is a general tendency for the rate of progress to decrease. The decrease indicated in Table 7, however, is partly explained by the fact that a large proportion of the settlers included in the study who had been on their farms more than 12 years, were located on sandy land in certain counties in the Lower Peninsula of Michigan.

The settlers in the 20–21-year group were keeping fewer cows than were those of the 12–13-year group. But this again reflects the type of land which is more suited to growing root crops than forage crops for feeding livestock. The group of 20 settlers who had been on their holdings from 21 to 25 years, inclusive (not shown in the table), are, however, probably fully up to normal. They had cleared a total of 47 acres, or 2 acres per year. They had 27 acres in crops, 2.6 head of horses, 4.6 milk cows, 6 other cattle, and total cash receipts of $1,240, of which $200 was from outside labor. Judging from the experience of this group, and assuming corresponding price conditions, the normal development at the end of 20 years is about 40 acres of clearing and 5 additional acres of brushing, with 25 to 30 acres in crops, and the rest of the clearing in pasture. The gross incomes at this stage are likely to be $1,100 to $1,200 per year, of which about $200 is still from labor off the farm. Buildings are likely to be worth from $1,700 to $1,800 per farm. The debt is still likely to be about the same as the original purchase price of the land; but with farms worth $2,500, an indebtedness of $450 is not very important.

If the settlers of these earlier years had located upon land with heavier soil (but not too heavy) they would have had less land cleared, but would have had more buildings and livestock, and larger receipts, and their farms would have been worth $60 or more per acre instead of $40.

It will be apparent that even in the later stages, cut-over farms are small enterprises. Their average area is only 83 acres, a considerable part of which is certain to be waste land or at least noncultivable land. But coupled with these facts are the further facts that many of the farms are on sandy soils, which produce low yields per acre, and that all the farms are too far north for much corn and other similar crops that produce a large value per acre at relatively low expense per acre. Potatoes, sugar beets, rutabages, and similar crops produce large values per acre, but at great expenditure of labor. Both man and horse labor are much more economically utilized in growing corn than in any of these crops, unless such crops are grown in relatively small acreages supplementarily to regular field crops, and thus use labor mostly when it is not needed by the regular crops.

The system of farming practiced in the cut-over region is therefore likely to be one which combines a small acreage of intensive crops, such as potatoes and rutabages, with a much larger acreage of relatively low-yielding grain and forage crops, the whole constituting a relatively extensive type of farming, with a relatively low value of product per acre. Hence farms in this region should be larger than in the Corn Belt if they are to return as large gross and net incomes. But actually they are smaller. The average farm capital of the farms in the 12-13-year group is only about $6,000. For these same farms 10 years later, it would probably have been around $8,000. But the gross incomes of these same farms 10 years later would probably have been less than $1,500 per year. Such incomes leave but small surpluses for improvements and financing the expansions needed to increase the rate of progress, and they do not usually permit of the standard of living that prevails in the Corn Belt.

STEADY DECREASE IN RATE OF LAND CLEARING

In the land-clearing chart (fig. 40) clearing and brushing have been combined, an acre of brushing being considered as equal to 40 per cent of a cleared acre.[7] The outstanding feature of this chart is that the rate of clearing is much higher during the first few years than afterwards. This is partly because the settlers usually bring some cash and supplies with them, which enable them to stay at home and clear land the first season; partly because they usually select the easy patches for their first clearing; and partly because the short period that the first-year settlers have been on their holdings has nearly all been during the summer months when most of the clearing is done.

The average rate per year is still somewhat high for the second-year group because some of the settlers have enough cash so they can work at home a second summer, because there are still relatively easy patches to clear, and especially because the large clearing of the first few months of the summer before is included with the second-year record in computing the average.

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[7] Brushing is here interpreted to include a certain amount of logging or cutting of cordwood and the like, and the picking up and piling of dead and down logs, as well as the actual cutting, piling, and burning of brush.

The average rate for the succeeding groups decreases steadily because the large acreage cleared the first two years is divided by more and more years and because the settlers are more and more engaged with outside work for a while, and later with farming activities, so that they actually spend less time clearing. From the second to the sixth year, they added about 3 acres each year to their clearing; from the sixth to the twelfth year, only about 2 acres each year.

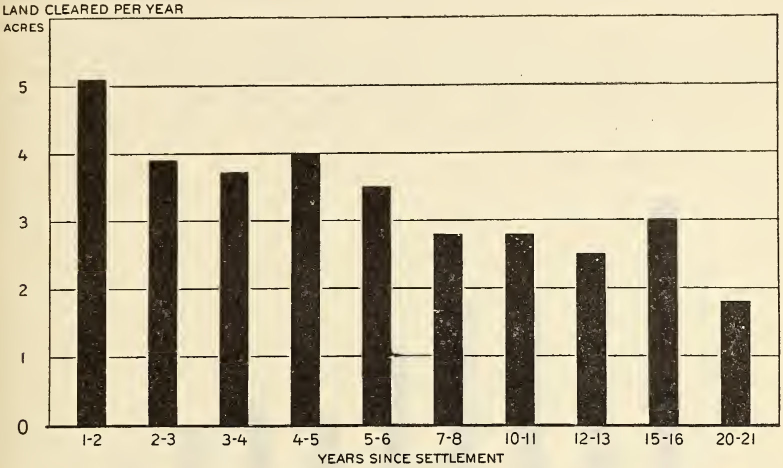

FIGURE 40.—AVERAGE ACREAGE CLEARED PER YEAR SINCE SETTLEMENT FOR GROUPS OF SETTLERS WHO HAD BEEN ON THEIR FARMS A LIKE NUMBER OF YEARS PRIOR TO 1920

Rate of clearing per year is high at the start. It decreases rapidly for the first few years, but thereafter only gradually. Part of the change in rate of clearing is accounted for by the fact that settlers usually move to their holdings during the spring and summer and make a good record the first few months. Brushing and clearing are combined in this diagram, 1 acre of brushing being assumed to be equal to 40 per cent of an acre of clearing.

DECLINE IN NET GAIN PER YEAR

In the chart for increase in net worth per year (fig. 41) the rate decreases from $942 per year for the newest group of settlers to $779 per year for the second group, to $717 per year for the third group, and so on to $228 per year for the 20–21-year group. There are two reasons for this decrease. Most of the increase in land values occurred during 1917–1920. Hence, for the recent settlers, all this increase is spread over a very short development period, making a high average rate per year; and the earlier groups of settlers have this increase expressed on the basis of an average rate spread over a long series of years. If land prices rose $8 per acre from 1917 to 1919, the settlers in their second year at the time of the survey would have $4 per acre per year, or $292 per farm of 73 acres, to show as annual net gain if they did nothing whatever on their holdings. If land prices rose $15 per acre from 1909 to 1919, the 10-year settlers would have only $110 per farm to show as annual net gain from this cause.

The other reason is the tendency of the settlers to decrease the rate of expansion of their enterprises after a certain stage is reached. This stage probably in many cases represents the attainment of an income that permits them to live with some comfort according to the standard of living to which they have become accustomed. In other cases, it marks the date of departure of the oldest son in the family. The settlers themselves sometimes explain it by saying they get tired of fighting the stumps about this time and feel the need of "taking things easier." On many of the farms little actual stumping is done after this time; the subsequent land clearing is mostly the result of cutting timber followed by pasturing and allowing the stumps to rot.

Some of the rapid increases appearing at the start probably represent false ideas of the settlers as to the value of their holdings. The increase is large at the start, in part at least, because of the rapid rate at which the first land is actually cleared and buildings are erected. The settlers during this period are converting their labor and the resources they have brought with them into land and building improvements. The cash they brought with them was counted in their net worth at the beginning, but their labor was not. The two together make a noticeable showing. The labor that settlers perform off their farms after the first summer or two goes largely to support their families. Their crops now take more of their time. But the settlers are now actually supporting their families from present income and not drawing upon and reducing a supply of cash, as during the first year or two. This should affect their net incomes, but it apparently does not, judging from the data furnished by the settlers. Here it seems probable that some of the net worth the settlers claim

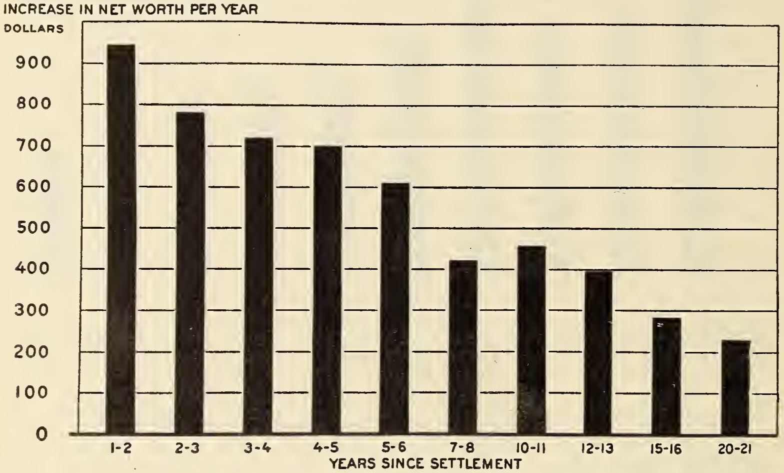

FIGURE 41.—AVERAGE INCREASE NET WORTH PER YEAR SINCE SETTLEMENT FOR GROUPS OF SETTLERS WHO HAD BEEN ON THEIR FARMS A LIKE NUMBER OF YEARS PRIOR TO 1920

The rate of net gain per year at the start is very high. Part of the change in the rate is due to changes in price level and part is accounted for by high estimates of clearing and values made by beginning settlers.

at this early stage is a matter of delusion—they have not added as much to the value of their farms as they believe they have. When settlement has developed to the point at which partly improved farms are being bought and sold, it is possible for a settler to have a fairly accurate notion of the market price of his land—but not in the early stages of settlement. Apparently the general tendency at this stage is to overstate values, and particularly to overestimate the value added by improvements made.

Perhaps another explanation is that the first operations upon a wild-land holding—the clearing of the farmstead, the erecting of the first building, and the like—actually give to the enterprise a "going concern" value which is more than the value of the actual physical operations. This would seem to have been the case, especially in certain localities where settlement was then proceeding rapidly under the pressure of active selling campaigns.

The amount of land brushed in advance of removing the stumps decreases after the sixth or seventh year. The settlers brush land at the start to furnish pasture for their cattle and to prepare the way for later clearing, but after six or seven years additional pasture is provided by the removal of the second-growth timber, which by this time is probably large enough to cut for market. After the tenth year, however, many of the less ambitious settlers think they have about all the land in crops that they need, and clearing operations are discontinued.

Figure 42, showing increase in livestock kept, indicates that ownership of cattle also increases more rapidly at the start. The early increase in cattle partly reflects the efforts of settlers to build up

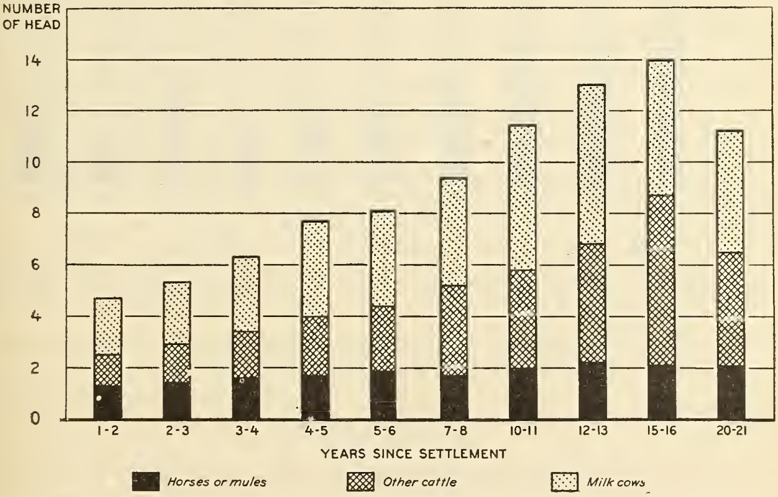

FIGURE 42.—AVERAGE NUMBER OF LIVESTOCK KEPT BY SETTLERS PER YEAR SINCE SETTLEMENT FOR GROUPS OF SETTLERS WHO HAD BEEN ON THEIR FARMS A LIKE NUMBER OF YEARS

Not until the tenth year is there an average of two horses per farm. Even then many settlers probably start with too many horses. Not until the twelfth year does the number of milk cows per farm reach five.

their herds to the fullest capacity of their wild-land pastures. The increase in horses kept is about equivalent to one horse.

Figure 43 shows how receipts change both in total amount and in composition from year to year after settlement. The increase is very gradual; about $50 per year for the first six years, and $30 per year for the next six years. The first summer many of the settlers have a small quantity of timber products to sell, and some of them—especially those who moved to their holdings the fall before—work off the farm. The second year shows the largest receipts from outside labor; not because more of it is available, but because the income from crops and livestock is still so small as to be of little help. From that time on the amount of outside labor generally decreases rather rapidly at first, rather slowly later. The income from crops and livestock products continues to increase to the end, but most of the increase occurs before the fifteenth year. Livestock sales increase more rapidly in the later years than do sales of livestock products—probably because the settlers have little surplus over their own needs till the later years of development.

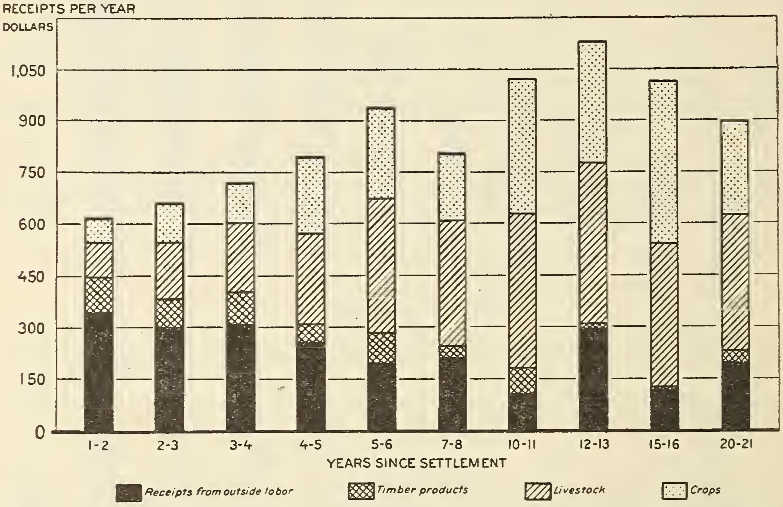

FIGURE 43.—AVERAGE RECEIPTS PER YEAR SINCE SETTLEMENT FROM CROPS, LIVESTOCK, TIMBER PRODUCTS, AND OUTSIDE LABOR FOR GROUPS OF SETTLERS FOR A LIKE NUMBER OF YEARS

Even in the advanced stages of settlement in the cut-over region, average annual receipts from all sources are less than $1,200. This fact indicates concretely that the average farm in this region is a small-scale enterprise.

FARM TURNOVER SINCE 1920 IN 33 SELECTED CUT-OVER SETTLEMENT AREAS

GENERAL ASPECTS OF SETTLER TURNOVER

A study of settler progress in a particular area is biased unless it takes into account the settlers who have tried, failed, and moved away. A statement often heard from men working with land-settlement problems is that on the average it takes two to three settlers to develop a tract of cut-over land into a profitable farming business—the inference being that one or two settlers usually give up, voluntarily or involuntarily sell out, or lose their farms, in the processs.

A high rate of farm turnover under certain conditions in developed sections of the country is an indication of prosperity. The demand for farms grows out of actual or predicted favorable prices for agricultural crops. In a cut-over community, however, a high rate of turnover of undeveloped farms is more likely to mean lack of prosperity than otherwise. A high rate of change in farm ownership in developed areas, with consequent increasing prices paid for farms, leads to increased selling activities of undeveloped lands and partly developed farms. Prospective purchasers who are familiar with the high prices asked for developed farm land in developed communities are easily led to believe that an inflated price for undeveloped land is a bargain price.

The period of rising and comparatively high prices for agricultural crops during and immediately following the World War resulted in many sales of undeveloped and partly developed cut-over farms in the Great Lakes States. Unless the cost and time required to bring cut-over land under cultivation, as well as the hardships that usually accompany development of a cut-over farm, are taken into account, such a period is more likely to lead to loss than gain to settlers. If it requires 5 to 10 years or more for the average settler to develop a self-supporting farm enterprise from a tract of cut-over land, the temporary high prices for agricultural crops at time of purchase will probably have disappeared before sufficient crop land is cleared to yield much benefit.

The following discussion of settler turnover is the result of an attempt to measure the rate of farm-ownership changes between 1920 and 1928. All farms included in the 1919 and 1920 surveys for which schedules were still available in 1928 were resurveyed to obtain a quantitative picture of settler turnover in the region. No attempt has been made to eliminate the influence which rising prices and the subsequent period of general agricultural depression may have had on the rate of settler turnover. Consequently the results obtained can not be considered as representative of normal conditions in the settlement of cut-over land. The facts, however, may be helpful to prospective settlers and to other persons interested in land-settlement conditions.

REVERSION OF FARMS TO ORIGINAL OWNERS BEWEEN 1920 AND 1928

The results of what may be called a land boom in many sections of the country during and immediately following the World War, followed by a period of general agricultural depression, were distressingly evident in 1928 in many parts of the cut-over region in the form of vacant farms with deteriorating farm buildings and fields reverting to brush. Many of these vacant farms were abandoned by the last resident settler and allowed to revert to a land-selling agency, to a mortgagee, or to the State or county for unpaid taxes.[8]

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[8] In Michigan and Minnesota tax-delinquent lands revert to the State and in Wisconsin to the county in which they are located.

Several land-selling agencies that had obtained a large number of partly developed farms through foreclosure and abandonment in 1928 were allowing many farms to revert to public ownership through nonpayment of taxes. The vice president of one large company stated: "There is no sound reason for borrowing money to pay taxes on farms which no one wants to buy at any price."

The distribution of abandoned farms in one county in northern Wisconsin in 1926[9] is shown in Figure 44. The concentration of abandoned farms in the four townships located in the northwest corner of the county represents a locality in which a land-selling agency centered its operations during the so-called "land boom" period.

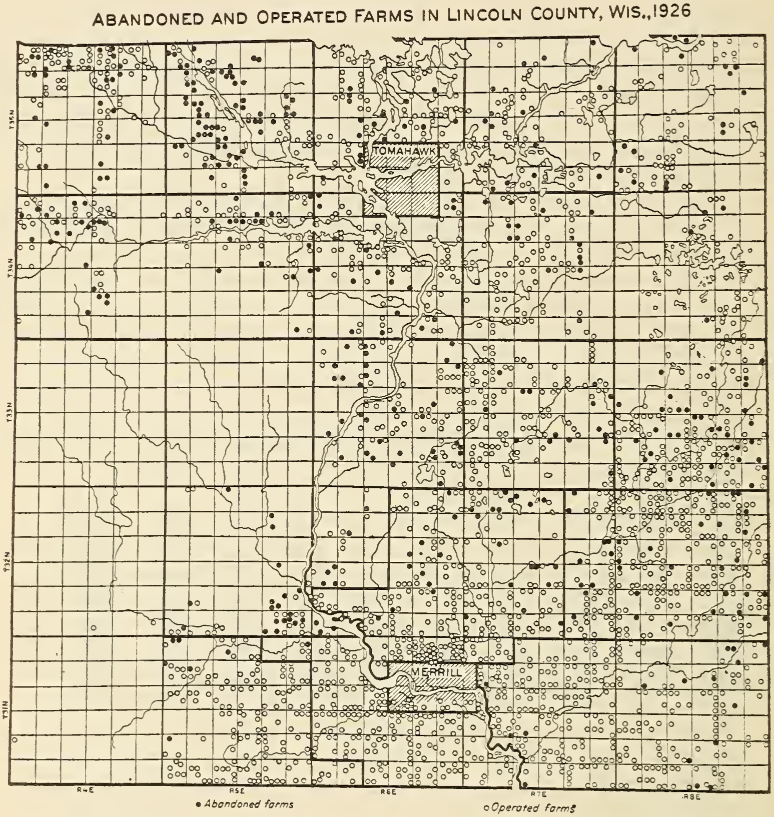

FIGURE 44.—In 1926, 402, or 17.6 per cent, of all farms in Lincoln County (2,279 farms) were abandoned. The land-selling agency to which a large proportion of the abandoned farms in this county reverted has discontinued paying taxes on many of them. Much of the land in these farms, which had been cleared and cultivated within the last decade, is reverting to brush. In almost every case an abandoned farm tells the story of hard work, loss of savings, and disillusioned settlers

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[9] These records were obtained by the U. S. Department of Agriculture in cooperation with the University of Wisconsin in a study of taxation in relation to land utilization. Partial results of this study are published in Wisconsin Experiment Station Bulletins 399 and 406 (*3*, *4*).

Out of a total of 1,615 farms included in the survey of settler turnover almost one-third (29.3 per cent) changed ownership between 1920 and 1928, and over half (53.6 per cent) of those that changed ownership reverted to original owners through foreclosure procedure or abandonment. (Table 8.) The proportional number of farms resurveyed in 1928 which had changed ownership since 1920 was larger in Wisconsin (42.1 per cent) than in Minnesota (36.7 per cent) or Michigan (17.9 per cent). Of the farms that changed hands in the Wisconsin settlements, more than four-fifths (81.8 per cent) reverted to original land-selling agencies, as compared with 39.7 per cent and 30.1 per cent of the Minnesota and Michigan groups, respectively.

TABLE 8.—*Farm turnover of settlers between 1920 and 1928 in 33 selected cut-over settlement areas of the Great Lakes States, by States*

State	Farms studied	All types of ownership-change	Reversion to previous owner	
			All farms studied	Farms that changed ownership
	Number	*Per cent*	*Per cent*	*Per cent*
Michigan	760	17.9	5.4	30.1
Wisconsin	444	42.1	34.5	81.8
Minnesota	411	36.7	14.6	39.7
Total	1,615	29.3	15.7	53.6

The comparatively high turnover and reversion of farms to original owners in Wisconsin is partly the result of the selection of areas for study in which land-settlement and colonization companies were most active during and shortly after the war. In general, many of these companies reached prospective purchasers through intensive advertising campaigns and high-pressure sales methods. As a consequence, a larger proportion of settlers who were not qualified to withstand the hardships and pioneer living conditions encountered in the development of cut-over farms, had settled in the Wisconsin areas surveyed than in the areas surveyed in Michigan and Minnesota. In fact, in Michigan and Minnesota the majority of settlers had bought their farms from small dealers and former settlers. Since these classes of sellers can not afford to spend large sums for expensive advertising campaigns, they are not likely to find opportunities to sell to city-bred men or men not qualified to develop successfully a tract of cut-over land.

In comparison of settler turnover in different States, differences in the character of individual projects should be given due consideration. The methods of land settlement employed as well as the physical conditions appear to have been responsible for notable contrasts in settler turnover in different projects. For example, although the proportion of farms, reverting to previous owners in Wisconsin projects is more than twice as large as in Michigan or Minnesota, the percentage of farms reverting to previous owners is 50 or more in settlement area 12 in Michigan, and in areas 11, 10, and 1 in Minnesota. (Table 9.) It is of particular interest to note that in all but two Wisconsin settlement areas in which settlers lost their farms through foreclosure or abandonment, more than four-fifths of the farms which changed hands between 1920 and 1928 reverted to the previous land-selling agency. This situation is not true as a general rule in either of the other two States. In fact, only 6 settlement areas (12, 14, 11, 8, 10, and 1) in Michigan and Minnesota had as large a proportion of farm reversion as the smallest percentage for any one of the Wisconsin settlements in which there was some change in ownership.

TABLE 9.—*Farm turnover of settlers between 1920 and 1928 in 33 selected cut-over settlement areas of the Great Lakes States*

Settlement area No.	Farms studied	All types of ownership-change	Reversion to previous owner		Settlement area No.	Farms studied	All types of ownership-change	Reversion to previous owner	
			All farms studied	Farms that changed ownership				All farms studied	Farms that changed ownership
	Number	*Per cent*	*Per cent*	*Per cent*		*Number*	*Per cent*	*Per cent*	*Per ceut*
1	24	87.5	75.0	85.7	18	45	28.9	8.9	30.8
2	20	65.0	65.0	100.0	19	71	31.0	7.0	22.7
3	21	66.7	61.9	92.9	20	62	17.7	6.5	36.4
4	49	59.2	53.1	89.7	21	55	12.7	5.5	42.9
5	58	63.8	51.7	81.1	22	36	27.8	5.6	20.0
6	93	51.6	45.2	87.5	23	39	43.6	5.1	11.8
7	21	38.1	33.3	87.5	24	66	25.8	4.6	17.6
8	41	68.3	32.7	46.4	25	26	19.2	3.8	20.0
9	30	33.3	26.7	80.0	26	104	8.7	2.9	33.3
10	27	33.3	25.9	77.8	27	49	22.4	2.0	9.1
11	32	34.4	25.0	72.7	28	104	15.4	1.9	12.5
12	33	36.4	18.2	50.0	29	119	10.9	0	0
13	51	23.5	17.6	75.0	30	60	25.0	0	0
14	30	40.0	16.7	41.7	31	30	3.3	0	0
15	31	25.8	16.1	62.5	32	18	22.2	0	0
16	73	26.0	12.3	47.4	33	52	7.7	0	0
17	45	17.8	11.1	62.5					

In 11 of the 33 settlement areas resurveyed, 25 per cent or more of the farms were abandoned or repossessed by the original land-selling agency or mortgagee between 1920 and 1928. In 5 of the 11 areas from 50 to 75 per cent of the farms, and in 3 other areas from 33 to 45 per cent of the farms, were abandoned or lost through foreclosure. The fact that in 10 of the 11 settlement areas 70 per cent or more of the farms on which there was any ownership change reverted to previous owners, suggests that farm abandonment or repossession proceedings were the usual and not the exceptional means of changing farm ownership. This same condition is suggested as evident in the 6 areas in which the percentage of farm reversion ranges from 11 per cent to 18 per cent of the farms surveyed.

With few exceptions, the areas in which a large percentage of farm reversion took place between 1920 and 1928 were comparatively new developments; furthermore, the settlers who abandoned or lost their farms through foreclosure in any specified area were in general the latest arrivals. (Table 10.) This condition is natural; after settlers have had time to develop their farms to an income-producing basis, the likelihood of abandonment or foreclosure procedure decreases. Besides any influence the selling policy of land companies and year of settlement may have had on the progress or lack of progress made by settlers, changes in price levels and many other factors (such as net worth of the purchaser at the time of settlement, size, location, quality and price of farm purchased, initial payment, credit terms, personal qualifications of the settler and his family, or other conditions) may have, alone or in combination, caused certain settlers to fail or to succeed.

TABLE 10.—*Average number of years on farms since settlement for farms that did not change ownership and for those that reverted to former owners*

Settlement area No.	Average number of years, per settler		Settlement area No.	Average number of years, per settler		Settlement area No.	Average number of years, per settler	
	Farms that did not change ownership [1]	Farms that reverted to former owners [2]		Farms that did not change ownership [1]	Farms that reverted to former owners [2]		Farms that did not change ownership [1]	Farms that reverted to former owners [2]
	Years	*Years*		*Years*	*Years*		*Years*	*Years*
1	2.0	2.4	12	18.5	8.3	23	8.4	5.0
2	1.3	1.2	13	2.8	2.1	24	6.7	8.7
3	4.1	2.4	14	8.1	8.0	25	6.3	7.0
4	3.5	2.8	15	4.6	2.0	26	7.3	5.7
5	1.9	1.3	16	11.2	5.2	27	7.1	9.0
6	2.3	2.0	17	7.6	4.4	28	9.6	2.0
7	5.0	3.4	18	6.0	4.8	29	15.2	0
8	7.2	6.2	19	7.1	8.2	30	15.5	0
9	3.9	2.8	20	8.6	6.0	31	4.3	0
10	5.3	5.6	21	12.2	11.3	32	10.4	0
11	6.5	5.5	22	6.5	3.0	33	7.8	0

[1] Since settlement up to 1920 and occupied by the same owner in 1928.
[2] Through abandonment or foreclosure.

FACTORS CAUSING FARM REVERSION, CONSIDERED BY SETTLEMENT AREAS

SETTLEMENT AREA 1

Settlers in this area bought land with poor natural drainage and relatively large acreage of marsh and swamp. A heavy growth of brush over much of the tract increased the difficulty of bringing the land under cultivation. The roads within the area are not much more than trails, and during wet weather they are impassable. The settler contracted to pay a high price for his land, as compared with prices asked for land with better physical and location characteristics within the same county. This group of settlers, almost as one body, abandoned their holdings. The few remaining settlers are scattered—far from each other and from markets. Owners of land are allowing large acreages to revert to public ownership through nonpayment of taxes. In so far as farming possibilities are concerned, settlers have little prospect of developing profitable farming enterprises in this area until there is a radical change in general economic conditions.

SETTLEMENT AREA 2

In 1928, 13 of the 20 farms resurveyed were abandoned. The reason for such abandonment, as reported by the remaining settlers and other well-informed local people, can be traced to the unscrupulous practices of the colonization company operating in the area. Through the use of high-powered sales methods, uninformed prospective settlers paid high prices for land too wet or sandy for profitable cultivation. The company operated for a period of two years, at which time the manager left the country, and the lumber companies that owned the land discontinued the project, but held the settlers responsible for meeting the terms of the contracts signed, regardless of how large a proportion of the land was unsuited for farming. Farm abandonment was a natural consequence.

SETTLEMENT AREA 3

The land company operating in this area sold the land on very liberal credit terms but at a high price per acre. Although the soil in the area is of a good productive type, much of it is unsuited for farming purposes because of stoniness. A former agent of the company operating in this area explained that the stony land was sold first in order to get the country established before selling the better lands for higher prices, but that the period of agricultural depression and the consequent lack of demand for cut-over lands occurred before the better lands could be marketed.

In 1920 the net gain and land-clearing record of the group of settlers was found to be less than the average for all groups who had been on their farms a like number of years. Of the 21 farms that were visited in 1920 and again in 1928, only 5 were occupied by the same settlers, 13 were vacant abandoned farms, and 3 were temporarily vacant. In October, 1929, 40 per cent of the total area of the civil town in which settlement area 3 is located was reported by the county treasurer as being tax delinquent. This situation suggests that further agricultural development in this area is not probable under present economic conditions. It also suggests that the tax burden will be increased on the property of remaining settlers and that this in turn will result in further abandonment.

SETTLEMENT AREA 4

The average initial net worth of settlers in this area was only $292. The significance of an initial net worth as low as $292 is not so much in its direct effects upon the settler's development operations as in what it indicates as to the quality of the settlers themselves. An extremely liberal credit policy of the company and the attempted close supervision and direction by the company of farm-development activities and social life of the settlers seem to have appealed to an inferior class of purchasers. No other company studied did as much for the settlers as this company. The initial payments required of settlers were a mere pittance, and liberal advances were made for buildings, land clearing, livestock, equipment, feed, and even living expenses. The reason for advancing living expenses was to give the settlers a chance to stay at home and clear land. This company also rented horses and farm machinery to save the settlers the expense of keeping horses and buying equipment which would be used only occasionally.

But many of the farms had unproductive sandy soils. Farm abandonment by families not qualified to develop profitable cut-over farms, particularly when the soil is poor, is only a matter of time. Between 1920 and 1928 over half of the farms surveyed in 1920 and again in 1928 had been abandoned, and the majority of settlers on the remaining occupied farms were dependent for their livelihood on income earned in the woods and from city employment, and not from their farms. The sentiment among these men seemed to be that they would not abandon their farms unless the colonization company took steps to collect debts due and past due. Until that time, the farms will be occupied rent free. The company, recognizing that this sentiment existed, was preparing in 1928 to take steps to hold the remaining settlers by writing off as much as half of the charges against farms and issuing new contracts. This procedure should interest settlers on farms having good soil, but it is doubtful whether settlers having light sandy farms can afford to pay even half of their existing land and grubstake debt.

SETTLEMENT AREA 5

This is another area being settled by intensive colonization methods, although the grubstake policy of the company was not quite so liberal as the one practiced by the company referred to in Settlement Area 4. The outstanding feature found in project 5 in 1928 was the large number of vacant farm shacks and cleared fields reverting to brush. Besides the 30 abandoned farms included in the resurvey of 1928 there were more than 100 additional farms which had reverted to the company through abandonment by the settlers. Too much credit at 7 and 8 per cent interest, and too high prices paid for stony land with good soil or for sandy land, were the reasons for the failure of many settlers. Then, too, many of the families appealed to by the liberal credit policy of the company were not qualified for the job of clearing land and developing a profitable farming enterprise. A well-informed old timer in the area said that the highly colored literature of the company appealed to the tired city people who had highly imaginative ideas regarding the freedom of life and the wonderful opportunity there was to be had in farming. They knew nothing about clearing land and would not have known what to do with land after it had been cleared even though it had been excellently suited for crop production.

According to a report received in October, 1929, from the local town assessor, taxes were no longer being paid on undeveloped cutover land or on many of the abandoned farms in the area. He states further that this situation is resulting in increased taxes on remaining occupied farm property. Since the remaining settlers had a very heavy load to carry without the burden caused by increased taxes, it was his belief that more farms would be abandoned in the area within the near future.

SETTLEMENT AREA 6

The condition of the settlement in this area is the result of intensive colonization methods. The advertising material used by the land company was probably more colorful than that used by any of the other agencies studied: The company advertised "ready-made farms." Buildings were erected in advance of settlement, and some advances were made by the company for livestock and equipment. In general, however, the policy of the company was more in the nature of helping settlers to spend their own money well than of making advances to them. The company put about as much back into the settler's holdings in improvements as was paid down by the settler at the time of purchase.

Misleading statements in advertisements, high-pressure sales tactics on the part of salesmen for the company, and a clause in the sales contract to the effect that the company assumed no responsibility for statements made by agents to prospective purchasers, resulted in the sale of cut-over farms to many city families destined from the start to fail. In 1928, 42 farms out of the 93 surveyed in 1920 had been abandoned or repossessed by the company, and practically all of the remaining settlers were hopelessly in debt.

The more or less common policy of concentrating sales efforts on the remote and poorer lands first, on the theory that the better lands will sell at a higher price later, was followed by this company. The market broke before all lands had been sold, and as a result settlers are badly scattered on the poorer soils. Poor social conditions and high per capita costs for schools and roads are a natural consequence, and they lead to further abandonment under the more or less adverse economic conditions experienced in the United States during the last decade.

SETTLEMENT AREA 7

In general, the lands sold by the company responsible for settlement in this area range from blow sand to heavy sandy loam. Needless to say, the farms located on the light sandy soils have been abandoned. The town assessor who has jurisdiction over the section in which Settlement Area 7 is located stated in a letter under date of October, 1929, that there were 110 abandoned farms in the town and that, with the exception of about 10 settlers, he believed the remainder would not abandon or lose their farms through foreclosure. He estimated further that owners have discontinued paying taxes on 65 to 70 of the 110 farms.

Besides poor soil, two other characteristic reasons for farm abandonment in this area are lack of farming experience on the part of settlers and the attraction of these settlers by relatively high wages paid for labor in a manufacturing plant about the time the agricultural slump was beginning to be felt. As explained by an old resident in the area, "9 out of 10 settlers knew nothing about farming or clearing land." At the present time the county board is taking steps to establish a county forest unit which will include most of this area.

SETTLEMENT AREA 8

Here is an area in which the majority of settlers had had previous farming experience. In fact, many of them came directly from Corn Belt farms. On the average they had comparatively high resources at the time of purchase and bought larger farms than usual.

Much of the land is fairly light sandy loam with a light growth of timber. All the land was purchased from dealers and agents without the aid of high-pressure sales campaigns. Up to 1920 the average settler in this area showed a net gain, per year, of half again as much as the average settler who had been on his farm a like number of years in the areas included in the study. Eight years later, however, more than one-third of the settlers in this area had abandoned their farms or lost them through foreclosure. Unproductive light soils, high mortgage debt, a bank failure in the area, and above all, high taxes are given as contributing reasons for abandonment. A tax assessor in this area, in a letter dated February, 1930, stated that an increasing area of nontax-paying land is placing the local town in financial embarrassment and necessitating the closing of local schools. It is not difficult to understand that a situation of this kind might easily result in higher taxes for remaining settlers and possible further farm abandonment.

SETTLEMENT AREA 9

This group of settlers probably illustrate the effects of more or less exclusive dependence on income from sources other than farming. A majority of the settlers work 10 hours a day in local sawmills during the summer and in the lumber camps in the winter. Practically all of the settlers were formerly from cities.

The company that sold the land also furnished employment to the settlers, and it now pays about 85 per cent of the taxes collected in the town. In brief, the company is the mainstay of the community. It is the general consensus of opinion among officials of the company and local residents that the supply of timber on which the company has to draw will be depleted and that the mill will cease operations and be dismantled by 1933. When this happens, old residents predict that many more settlers, who are working in the mill and lumber camps regularly at the expense of developing their farms, will abandon their holdings and seek employment elsewhere.

The picture of farm abandonment in this area, as is suggested in Table 10, is not at all representative of actual conditions in the area. Although no accurate count of abandoned farms has been made, the outstanding condition that impresses one who drives over the roads in certain parts of the area, is the large number of vacant farms. On some roads, house after house stands unoccupied in its little plot of clearing, reverting to brush rapidly. The absence of water on many farms is given as a cause of discouragement and abandonment. Although a few settlers were able to dig wells at reasonable cost, the usual cost to obtain water was far more than a settler could afford to pay. Some settlers spent as much as $500 to get a well.

The general feeling of old residents is that the real cause of abandonment can be traced to the fact that many of the settlers were recruited from factories in large cities. Some of them had no idea of what they had to contend with in the development of a cut-over farm, and could endure only a few years' experience in stumping and breaking land.

SETTLEMENT AREAS 10 AND 11

Areas 10 and 11 can also be characterized by the large degree of dependence of settlers on income from labor off the farm. In these two areas, as in settlement area 9, work on the farm was secondary to any employment the settler could obtain in local mills and lumber camps. A large part of the land purchased is rough and stony. One-fourth of the settlers whose farms were resurveyed in 1928 had abandoned their farms or had lost them through foreclosures between 1920 and 1928. No doubt the inclination to work elsewhere rather than clear land on the farm and the fact that the land was not so well suited for agricultural development as it might have been, led many of these settlers to abandon their farms and seek employment elsewhere when employment off the farm became scarce in these two areas.

SETTLEMENT AREAS 12 TO 17

Farm reversion to previous owners between 1920 and 1928 in settlement areas 12 to 17, inclusive, ranged from 11.1 to 18.2 per cent of the farms which were resurveyed in 1928. Two of these areas are located in Wisconsin and four in Michigan.

A certain amount of farm reversion to previous owners is to be expected in the development of any community regardless of the quality of the land. Ten to twenty per cent of farm reversion, however, can probably be considered slightly more than an average amount.

Considering the two Wisconsin areas first, it is evident that the land-selling agency operating in No. 13 practiced a very aggressive selling policy and that the settlers obtained were well below the average in previous farm experience. Nearly a fourth had never had any farm experience, and their beginning net worth was only half of the average for settlers in other groups who bought farms the same year. Of the land bought by settlers, 22 per cent was noncultivable. Roads over much of the area are poor.

Area 15 represents a more or less isolated and widely scattered community. Many nationalities are represented, and there is an outstanding lack of community spirit and social life. Lack of medical service within 10 to 15 miles, inadequate educational facilities, and poor roads are factors of discouragement.

Areas 12, 14, and 16 in Michigan are characteristic jack pine sand communities. Farm abandonment in these areas is not new; in fact, the settlers included in the 1920 survey were only those who practiced the best agriculture on the best patches of land. The others had already been forced out, as was evident by many abandoned farms and clearings. Therefore, abandonment between 1920 and 1928 of 12 to 18 per cent of the settlers surveyed in 1920, does not present an accurate picture of conditions in these communities. In all three areas unscrupulous land-selling companies, through the use of high-powered salesmanship, sold and resold farms to uninformed city people. The practices of one of the companies led the State to discontinue the right of the company to sell real estate.

One company undertook to sell Settlement Area 16 in small tracts for fruit and poultry farms. The land is typical jack pine and scrub oak sandy outwash plain. The area is located along the edge of a prosperous fruit section. A colorful name and misleading statements in advertisements that centered on prospective purchasers in Chicago resulted in many sales, but only a few established farms.

In October, 1929, a town official in Settlement Area 12 wrote that he did not look for further farm abandonment in his town because oil had been struck near by, and many believed there was a possibility of finding oil under the land they owned. In January, 1930, officials from the other two areas said more farms were being, and would continue to be, abandoned. Lack of a prospect of making a satisfactory living from sandy farms and high taxes were given as reasons.

The treasurer of the county in which Settlement Area 17 is located estimates that fully one-half of the undeveloped land acreage of the county is tax delinquent and that there are few buyers of delinquent tax certificates, with the result that the lands are reverting to the State. A large part of the land in the county is low and wet, and owners generally do not pay taxes on such land after the merchantable timber has been removed. Regardless of this situation there is little farm abandonment, and a strong cooperative community spirit prevails. All but three of the settlers surveyed were Finns who had had farm experience before settling here. These Finlanders have proved to be hard workers and willing cooperators. As a consequence, abandoned farms are likely to be few in number.

SETTLEMENT AREAS 18 TO 33

Three Michigan areas and two Wisconsin areas have the distinction of showing no abondonment or loss through foreclosure between 1920 and 1928 among those farms that were surveyed in 1920 and resurveyed in 1928. Likewise farm reversion to original owners in five Michigan and six Minnesota areas (Nos. 18 to 28, inclusive), was no more between these years than would ordinarily be expected in the development of a cut-over area.

Almost four-fifths (77.5 per cent) of the 936 settlers located in settlement areas 18 to 33, inclusive, were foreign born, as compared with slightly more than two-fifths (41.2 per cent) of the 679 settlers representing settlement areas 1 to 17. (Table 11.) In only 3 (areas 21, 24, and 30) of the 16 areas in which less than 10 per cent of the farms reverted to previous owners was the percentage of foreign-born settlers less than 50. The settlers in area 21 were nearly all American or Canadian born, and all but 11 of them had had previous farm experience. They had been on the land all the way from 1 to 27 years. The land was originally covered with hardwood, and the soil is a rich clay loam. Almost half (48.5 per cent) of the settlers in area 24 were Scandinavians and Finns, whereas in area 30 slightly more than one-third (38.3 per cent) were of Polish origin. The soils in both areas 24 and 30 are, with the exception of small patches of swamp, good productive soils, and only a few of the settlers had not had previous farming experience. Finlanders predominated in 8 of the remaining 13 areas showing less than 10 per cent of farm reversion between 1920 and 1928; Danes predominated in 4 areas, and natives of Austria-Hungary constituted the majority of settlers in the remaining 2 areas.

Although it would be necessary to analyze many contributing factors in order to account for the lack of or small amount of farm reversion in settlement areas 18 to 33, observations suggest that nativity of settlers is of primary importance. The land in three areas (19, 29, and 33) is of poor quality for farming purposes, and in areas 23 and 32 it varies from good to poor; yet farm abandonment by the foreign-born settlers is decidedly lacking. One of the reasons for this is that, in general, foreign-born settlers are willing to work longer and harder and maintain a lower standard of living than is the average native-born settler. They are willing to sacrifice more than the average to satisfy a desire for land ownership. (Table 11.)

TABLE 11.—*Percentage of foreign-born settlers in each settlement area*

Settlement area No.	All settlers	
	Total	Foreign born
	Number	*Per cent*
1	24	75.0
2	20	25.0
3	21	61.9
4	49	16.3
5	58	29.3
6	93	54.8
7	21	9.5
8	41	31.7
9	30	33.3
10	27	48.1
11	32	28.1
12	33	45.5
13	51	60.8
14	30	33.3
15	31	22.6
16	73	21.9
17	45	93.3
18	45	75.6
19	71	77.5
20	62	96.8
21	55	36.4
22	36	69.4
23	39	51.3
24	66	48.5
25	26	65.4
26	104	97.1
27	49	65.3
28	104	95.2
29	119	93.3
30	60	38.3
31	30	96.7
32	18	83.3
33	52	100.0
All settlement areas	1,615	62.2
First 17 settlement areas	679	41.2
Last 16 settlement areas	936	77.5

GENERAL OUTLOOK FOR LAND SETTLEMENT IN UNDEVELOPED REGIONS

The discussion thus far has been entirely in terms of conditions in the cut-over region itself But the prospective development of the region. and the prospective success of new settlers can not be entirely divorced from the general outlook for land utilization in the United States. There are many mistaken ideas with regard to these questions, and not infrequently prospective settlers are given incorrect impressions regarding answers to them. For instance, a booklet distributed by a land company operating in the cut-over region of the Great Lakes States contains the following statements:

> The basis of the present farm land situation is the fact that there is just so much land, and there is no more being manufactured, and that our population is increasing at the rate of hundreds of thousands per year.—There is only one crop of land.
>
> The world is fed to-day only because we have advanced in the science of agriculture. Ages of cultivation and the experiments of thousands of unheard of Luther Burbanks have given us great progress in agriculture; but we must not forget that we are now approaching the limit of productive lands.
>
> While our population has increased 26 per cent in the last decade, the area of farm land has increased less than 5 per cent, and a further increase of 9 per cent will include all the remaining land that can be cultivated.
>
> That there will never be any more land on this earth than there is at the present time, and that our rapidly increasing population will sooner or later outstrip the productiveness of our soils—is a philosophy so simple that a child can understand it.

Such statements as are contained in this quotation are largely misleading and inaccurate.

DECLINING RATE OF INCREASE IN POPULATION

There is ground for apprehension concerning the ultimate scarcity of land available for our needs only when we can assume that population will increase steadily for an indefinite period. Contrary to this assumption, the rate of increase in population has been declining for several decades. O. E. Baker[10] concludes that within a few decades the United States will probably be dependent largely upon immigration for its increase in population, and that in 50 to 75 years a stationary population will be attained; also that this stationary population will be somewhere between 175,000,000 and 200,000,000 people. According to carefully compiled estimates by Thompson and Whelpton, of the Scripps Institute of Population Research, the population of the United States will be about 150,000,000 in 1950 and 175,000,000 in 1975, after which the increase will lessen rapidly until a stationary condition is reached about the year 2000. Other recognized population authorities (Louis I. Dublin, statistician for the Metropolitan Life Insurance Co., New York City, and Robert Kuczynski, Brookings Institution, Washington, D. C.) estimate that, barring liberalization of immigration restriction, a stationary stage in population of about 160,000,000 will be reached within 30 or 40 years. The rapid approach of this stationary condition in natural increase is indicated by the drop in birth rate and the declining enrollment in the lower grades of the public school (*7*). If the birth rate, which dropped from 25 per thousand in 1916 to about 20 per thousand in 1927 should fall as much more in the next decade, the number of births would not be enough to maintain even a stationary population a generation hence, and any increase in number of people would be dependent upon immigration. This decreasing rate of increase represents, at least in part, a tendency to prefer a high standard of living to a large family.

EXCESS IN POTENTIAL CROP LAND IN RELATION TO PROBABLE FUTURE REQUIREMENTS

Doctor Baker estimates further that there are about 500,000,000 acres of land in the United States physically available for crop production but not yet cultivated and that only about a fourth of this area in addition to the present crop area will be needed for crops to supply a population of 200,000,000. This, however, does not necessarily mean that all crop land will not be put under cultivation at some time in the future. The uncertainty as to the quantity of foodstuffs that will be exported or imported in the future and the uncertainty of future changes in consumption and production make such a prediction hazardous.

Although ultimately it will become necessary to bring more land into farms and to resort to poorer grades of land and although we may eventually experience increasing relative prices for farm products and farm land, there is reason to expect that some time will elapse before these phases of economic development will be manifested. From 1910 to 1920 land was taken into farms more rapidly than developments since the World War have shown to be justified, a tendency which has been partially responsible for the long continuance of unfavorable prices for agricultural products.

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[10] BAKER, O. E., DO WE NEED MORE FARM LAND? (Address at Agricultural Extension Conference, University of Minnesota, St. Paul, Minn., Dec. 13 and 14, 1928.) U. S. Dept. Agr., Bur. Agr. Econ., 32 pp., illus. 1929. [Mimeographed.]

The present period is one in which crop land has been going out of use rather than into use in most of the originally forested parts of the United States. According to the agricultural census of 1925, crop land decreased 4 per cent between 1919 and 1924.[11] This tendency and the correspondingly small demand for cut-over land is the result not only of the over expansion of the period just preceding 1920 but also of a number of other conditions, including a reduction in the effective demand of certain European countries; the continued expansion of crop area in Canada, Australia, Argentina, and other countries; the partial recovery of Russian agriculture; and certain great economies in the use of land, particularly the substitution of tractors for horses, the substitution of intensive for extensive crops, more efficient methods of feeding livestock, and the employment of more productive varieties of crops and breeds of livestock.

If the general trend during the past quarter century toward a larger proportional consumption of plant foodstuffs than of animal foodstuffs continues it would result in a lessened need for agricultural land because animal foodstuffs require a much greater acreage for the production of equal food values than do plant foodstuffs. The demand for cut-over land has probably been affected also by the development of methods of production that permit the profitable expansion of agriculture in subhumid parts of the Great Plains.

PROBABLE SMALL NEED FOR EXPANSION OF CROP AREA DURING THE NEXT DECADE

It has been estimated that 50,000,000 acres (or their equivalent) of additional crop land will be required by 1940 to feed an estimated increase of 17,000,000 people, but that there will be no need to expand the net crop area of the United States to feed them. The substitution of tractors, trucks, and automobiles for horses and mules within the next 10 years will release from 10,000,000 to 20,000,000 acres of crops to feed the increased population. It is also considered a conservative estimate to expect 1 per cent per year increase in the production of meat and milk per unit of feed consumed. This increased efficiency will release an additional 18,000,000 acres in 10 years to feed the increased population. In other words, these two factors alone appear sufficient to feed 15,000,000 additional people a decade hence, and this conclusion does not assume any increase in acre yields of feed crops, which constitute about 70 per cent of the total crop acreage.

Furthermore, in 1924, according to the census, there were about 34,000,000 acres of " crop land lying idle or fallow " of which fully 25,000,000 were idle. In 1928 the estimates of the Bureau of Agricultural Economics indicate 10,000,000 more acres in harvested crops than in 1924. The increase represents part of the idle crop land as of 1924, part from plowable pasture, and a smaller part from clearing of forest land. This still leaves enough idle crop land in farms to provide for nearly all the probable increase required in crop acreages by 1939. In addition, there are over 100,000,000 acres of plowable pasture in farms, as well as large areas that may be utilized for crops by clearing or draining. These facts lead to the conclusion that there will be no need to expand the net farm area of the Nation during the next decade.

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[11] A change in the form of the census questions affected somewhat the comparison.

RELATIONSHIP OF GENERAL ECONOMIC CONDITIONS IN A GIVEN PERIOD TO PROBABLE SUCCESS OF SETTLERS

The period from 1915 to 1920, when there was more than the usual amount of settlement in the northern Lakes States cut-over region, proved to be a poor time to become a settler. Those who attempted it had not had time enough, in most instances, to develop their holdings to a sustaining basis before the general business depression came in 1920 and 1921, closing down many of the mines, lumber camps, sawmills, and other wood-using plants in the cut-over region and leaving many settlers without a way of earning a living. In some of the years following the prices of potatoes were very low; and the prices of none of the products were as high as those of groceries, clothing, and supplies needed for farming operations. The result has been an unusual amount of abandonment of holdings, or leaving them temporarily so that an income could be earned elsewhere.

For some persons a period of actual depression is a better time to take up a holding than a period of prosperity. Miners, for example, often take advantage of a period of unemployment to erect a house on a holding or clear the first few acres of land. Families sometimes move out from cities on similar occasions.

When, however, the depression is a sustained one, affecting agriculture as a whole as compared with urban industry, it is impossible to escape the conclusion that the depression will not disappear until agricultural production has come into balance again with industry. Circumstances other than expansion of production, such as general monetary inflation and deflation, may have been involved in it, but if production is on a relatively expanded basis, then the depression will not end till production has contracted, or consumption has caught up with production, or costs have been reduced sufficiently to support the larger product. At such times persons who are thinking of becoming settlers would do well to ponder long before undertaking to bring new land into cultivation. According to the 1925 census, there was a decrease of 13.000,000 acres of land in crops between 1919 and 1924; and in Michigan, Wisconsin, and Minnesota there was a decrease of 1,457,662 acres of land in farms, and an increase of 54,318 acres of land in crops. Twenty-six of the actual cut-over counties in the Great Lakes States showed a decrease in land in farms.

The prevailing opinion of students of land utilization is that present tendencies will continue for some time. Poorer grades of land seem destined to go back to more extensive uses—to machine production on a larger scale, or to grazing, or to timber, according to conditions. It is not impossible that energetic, intelligent, and thrifty settlers may suceed in establishing themselves, even under present conditions, but there is reason to believe that their chances of success are less than they would be under more favorable economic conditions.

The foregoing conclusion is supported by two relatively recent reports on the agricultural situation, one by a commission of 10 business men appointed by the United States Chamber of Commerce and the National Industrial Conference Board, and the other by a committee of deans of agricultural colleges appointed by the national association of these colleges. Both groups urge the passage of no more acts to establish new reclamation projects, and both urge the creating of machinery for the bringing of new land into farms under better adjustment to agricultural conditions. New settlement should be stimulated only after agricultural conditions definitely promise to remain on a higher level.

ECONOMIC LAND CLASSIFICATION A MEANS OF PROMOTING WISE SELECTION OF LAND FOR SETTLEMENT

Without a directed settlement policy as part of a regional planning program, prospective settlers are likely to be imposed on by the less scrupulous land-selling agencies. Ignorance on the part of both prospective settlers and land-selling agencies may also account for unwise selection of land for farming. The usual end result of undertaking to farm lands that are not economically suited for agricultural development is represented by abandoned farms and the wrecked lives and hopes of those who fail. An official policy of directed settlement, based on a regional planning program which takes the need for more crop acreage into consideration is essential for the prevention of the social loss due to unwise selection of land for settlement. Until such a policy is established the prospective settler should explore all reliable sources of information pertaining to sections of the country in which he is interested. With such facts in hand he is in position to weigh the advantages and disadvantages of different localities and his own qualifications, likes, and dislikes, as well as those of members of his family, against the hardships encountered in developing a cut-over farm.

SUMMARY

The solution of land settlement problems in any undeveloped area necessitates an analysis of a complex of physical, engineering, social, personal, and miscellaneous economic factors and conditions. The land phase of the problem resolves itself principally into the question of how to get the land under cultivation at a cost commensurate with the productive return which can be expected after reclamation. Under existing agricultural conditions and in the light of our present knowledge of the limited economic need for the expansion of our crop area for many years to come, prospective settlers can not afford to pit their resources against the obstacles encountered in the development of a new farm in any area that is not definitely more economically suited for agricultural purposes than for some other purpose. The results of the type of land-utilization study necessary to locate such areas within the cut-over region of the Great Lakes States are not available. The lack of such results suggests the need for more careful study by prospective settlers and others concerned with land settlement problems of the wide range of the physical conditions of the region as they relate to other factors which tend to retard or promote the successful development of farms.

The region covered by this circular consists of 113 counties or 71,000,000 acres in which only a third of the land is in farms and only an eighth in crops. The temperature, soil, and topography of the region vary widely. Parts of the region have adequate rainfall, but certain sections are subject to prolonged drought. The number of frost-free days varies from 50 to 170, and at least one-third of the region has poor soils for farming.

The total area of forest and cut-over land in the region has been estimated to be about 57,100,000 acres. Although the settler may be interested in growing timber to the extent of a small wood lot, his primary concern is to clear the land and get it into crops. Much of the land is difficult to clear, either because it is stony or because it contains many stumps of slow-rotting coniferous trees, or frequently for both reasons. A covering of brush or second-growth timber along with down logs adds to the difficulties of clearing. Briefly, the prospective settler must not overlook the necessity for hard work and putting up with other hardships encountered when hewing a farm out of raw cut-over land.

Dairying is the most important type of farming in the region, although corn, which is usually associated with dairy farming farther south, is not a sure crop. Hay and oats are the principal feed crops, and the potato crop is the major cash crop. Many settlers, who fail to appreciate the climatic limitations, lose much of their limited initial capital by trying to grow crops not adapted to the region or by overstocking their farms before enough land has been cleared to grow the necessary feed crops.

Generally speaking, it might be said that most railway lines run past, rather than through the region. Many settlers are located on excellent highways, but in many sections of the northern parts of all three States the roads are very poor, especially when wet. Where the the roads are poor, the mail service is poor, and as a general rule the settlers are handicapped in getting to and from markets and social centers.

The cut-over region is, on the whole, fairly well supplied with district schools. Local markets, however, usually handicap the settler both in buying and selling; margins must be high because the volume of business is small, and local stores are handicapped by the fact that settlers are frequently financially embarrassed.

The fact that most land-selling agencies are in the business of selling the land they own or have in stock, regardless of location and physical characteristics, suggests the need for careful investigation by prospective settlers before buying any land. The glowing accounts of successful settlers, found in the literature of many land-selling agencies, are misleading. If the average settler were as successful as statements in such literature predict for all, there would be no settlement problems.

Credit is the most important of the settler's needs, but it is a very difficult thing to obtain on reasonable terms. Capital is needed not only for the initial and subsequent payments on the land, and interest on debt, taxes, and insurance, but also for lumber and building material, dynamite, and other land-clearing equipment, livestock, feed and seeds, groceries, clothes, and other living expenses. Few land contracts are suited to meet these needs even for the most promising settlers.

There is a large element of truth in the oft-repeated statement that " when it comes to making a success on a cut-over farm, nothing much counts but the settler himself." Although personal qualifications may represent an important factor in success, any number of other factors are also closely associated with them.

If he expects to make more than a small net gain for his efforts, the average settler is likely to be disappointed. In fact more than five to six years are required to make the average cut-over farm self-supporting. Extensive land-clearing activities at the start result in the greatest net gain to the settlers the first few years, after which both clearing and net gain for the average settler decreases rather steadily until about the twelfth year, when clearing operations are usually discontinued.

A study of settler progress in any particular area is biased, unless it takes into account the settlers who tried, failed, and moved away. A statement one often hears from men who are working with land-settlement problems is that on the average it takes two or three settlers to develop one tract of cut-over land into a profitable farming business; the inference being that one or two settlers usually give up, voluntarily or involuntarily sell out, or lose their farms in the process. Vacant farms with deteriorating farm buildings and fields reverting to brush are distressingly evident to-day in many parts of the cut-over region. Many of these farms were abandoned by the last resident settler and allowed to revert to a land-selling agency, to a mortgagor, or to the State or county for unpaid taxes. Out of a total of 1,615 farms included in a settler survey, almost one-third (29.3 per cent) changed ownership between 1920 and 1928 and over half (53.6 per cent) of those which changed ownership reverted to original owners through foreclosure procedure or abandonment.

An analysis of the factors and conditions suggests the conclusion that until a directed settlement policy based on an economic classification of land is established, the prospective settler can eliminate certain hazards only by exploring all reliable sources of information pertaining to the area in which he is interested, and by weighing the advantages and disadvantages of different areas and his own qualifications, likes, and dislikes, as well as those of members of his family, against the hardships encountered in developing a cut-over farm.

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